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THE THEORY OF SOCIAL ECONOMY

VOL. I.

THE THEORY OF SOCIAL ECONOMY

By GUSTAV CASSEL

Professor at the University of Stockholm

Translated by JOSEPH McCABE

VOL. I.

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PREFACE

A PROGRESSIVE science will always find it necessary, in order to make room for new investigations, to leave out such old matters and old discussions as are no longer of essential importance, and to find ways for introducing the student as directly as possible to the questions of actual interest. This need certainly exists also for the science of economics. From the first beginnings of my studies of this science I have felt that it ought to be possible to do away with the whole of the old theory of value as an independent chapter of economics and build up the science from the beginning on the theory of prices, and that we in this matter would be able to rid ourselves of a lot of unnecessary discussions, mostly of a rather scholastic nature, which had burdened earlier treatises on economics. I made a first attempt to draw up the outlines of such a presentation of economics in the paper *Outlines of an Elementary Theory of Prices* (published in German, 1899). Since that time, I have worked further on the program laid down. In *The Nature and Necessity of Interest* (London: Macmillan, 1903), the treatment of interest as a price was carried through. The abolition of a separate theory of value, and the direct construction of economic theory on the basis of a theory of prices, naturally required a theory of money adapted to the new system of economics. In the general economic theory we must reckon all values in a unit of money. The value of this unit itself cannot be determined there. To do this is the separate function of the theory of money. The central point of this theory is that the value of the unit is determined by the scarcity of the means of payment valid in the given monetary system. This conception of the theory of money is first outlined in *The Nature and Necessity of Interest* (Chapter V.).

At the outbreak of the War, the manuscript of the present work (in German) was ready. Owing to the difficulties of the War, however, the book was not published until 1918. It then transpired that the work could be left essentially as it stood, and that the experiences of the War could better be taken into account in separate treatises. Two appendices were added in order to clear up the importance of the new experiences. I retain this arrangement here. Naturally the new experiences require a much more detailed analysis. But I believe that this can be done in the easiest way on the basis of the principles laid down in the present work. For the theory of money I have tried to do this in my *Money and Foreign Exchange after* 1914 (London and New York, 1922). The investigations of the conjuncture movements which are contained in Book IV. of the present work cover a period of economic history which has its natural end with the year 1913. The War has broken all lines of connection, and an organic continuation of the statistical material brought forward in this book will never be possible.

I call this work *The Theory of Social Economy.* The meaning of this is that I intend to treat the economic relations of a whole social body as far as possible irrespective of its extension, its organisation, its laws of property, etc. The ultimate aim of economic science must be to discover those necessities which are of a purely economic nature and which cannot be arbitrarily mastered by the will of men. An intimate knowledge of these necessities is the first condition for Social Reformers being ever able to produce something more than cheap speculations on the economic organisation of the future or costly disturbances of the very delicate machinery of present economic life.

In the present English edition I have tried to make the exposition clearer at certain points, and at the same time I have shortened the text where this seemed possible. I hope that English students will find the present treatise, although its reading without doubt requires a certain amount of thinking, to be the easiest and most direct way to get access to those great economic and social problems of the day for the understanding of which they undertake the trouble of economic training.

GUSTAV CASSEL.

Djursholm,
Sweden,
January, 1923.

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FIRST BOOK

GENERAL SURVEY OF THE SOCIAL ECONOMY

CHAPTER I

ECONOMY IN GENERAL

§ 1. The Nature of an Economy.

"ECONOMY" literally means "household"—that is to say, a certain organised activity for the satisfaction of human needs. In primitive conditions this activity is confined to small self-contained units of which the family has had the chief significance in the development of civilisation. But this development depends essentially upon the continuous enlargement of the sphere of the economy. Households, or family economies, come into touch with one another and depend, for the satisfaction of their needs, upon a mutual co-operation, the economic range of which becomes more and more extensive. This leads to the creation of a larger economy, the social economy. The community may be at first no more than the population of a village, but it steadily increases until it becomes a whole people, and in the end it means the community of the race (compare § 7).

In English (unlike German), we cease to speak of a "household" when the co-operating group grows beyond the limits of a single habitation, and we use the Greek word "economy." It denotes the economic activity of the larger group of social units which has steadily superseded the family in the work of satisfying human needs. In modern conditions the individual household is but a very small fragment of the larger economy, the various parts of which are so intimately and indissolubly connected that it must be regarded as an individual whole. The individual household is no longer self-contained. The economic process by which its wants are met is conducted, for the most part, outside of it. It is this larger process to which we have to give our attention if we would understand the economy of a modern community; and we are thus led, from the very nature of the case, to study an economy of such range that it is, or practically may be regarded as, self-contained.

Popular discussions of economic questions are almost invariably characterised by the fact that only a small and arbitrarily selected part of the entire economic mechanism is taken into account, and thus only so much of the economic processes and relations is regarded as happens to fall within this arbitrarily chosen section of the larger economy of the community. The most common and the crudest mistakes of popular opinion and of political oratory may be traced to this defect. Economic science must aim at thoroughly and exhaustively elucidating the entire network of causes and effects, and it must therefore take a complete economy as the subject of its investigations. This economy must be "self-contained": it must have no relations with anything outside itself. If there were such relations—at least relations of any importance—it would be impossible to attain a complete explanation of the various phenomena within the economy under consideration.

Well-trained business men often have a much more intimate knowledge of the economic life than it is possible for a scientific man to acquire. It may, therefore, reasonably be asked what the *raison d'être* of economic science is, and on what grounds scientific economists are entitled to speak with authority on economic subjects. The answer is that the practical man has perforce to confine his observation within the limited sphere of his own work, whereas the scientific economist sets himself the task of acquiring a comprehensive knowledge of the social economy and the economic process as a whole. There thus arises a natural division of labour; but both practical insight and scientific investigation are most fruitfully promoted by an intimate collaboration of the men engaged in business pursuits with the men of science.

We have said that the aim of every economy is the satisfaction of human needs, and the economy is, therefore, an activity for the purpose of affecting this satisfaction. Yet the act of satisfying needs is not itself to be regarded as an economic activity. The satisfaction of a need as such generally means a certain more or less active preoccupation on the part of the person who satisfies his needs. The man who wishes to satisfy his hunger must eat: the man who seeks the recreation of a walk must use his legs: the man who desires to provide his own music must play or sing. Activities of this kind do not come within the economic sphere.

In certain cases the need may simply be met by an activity of this description—when, for instance, a man drinks out of a brook, or eats wild berries in the course of a walk, or when we enjoy the sun or meet our need of air by simply breathing. As a rule, however, the satisfaction of our needs entails an antecedent preparatory activity to create the means for satisfying our needs; or, when this is not the case, at least some activity of other persons for the purpose of directly meeting a man's needs. Such a preparatory activity to create the means of satisfying our wants is, for instance, the installation of pipes to provide a convenient water-supply or the preservation of fruit for winter use. There is a direct satisfaction of needs by the action of others when, for instance, one's desire of music is satisfied by going to a concert. The sum of the activities which serve to satisfy needs but are not identical with that satisfaction is what we call an economy.

The economy is in the main a preparatory activity for the purpose of effecting a future satisfaction of needs, and it therefore implies the pursuit of some future aim. Of its nature, therefore, it includes a certain regard for the future, a certain measure of conscious action. It is conceivable that there should be an economy of isolated individuals, but it would be a very poor arrangement and is exceptional. As a rule, an economy means a co-operation of several individuals to meet their needs, This co-operation naturally implies a more or less extensive and ramified organisation. When the economy includes a number of men, it is an organised economic activity. The higher the grade of the economy, the more prominent do we find these two factors: regard for the future and organisation. The whole of civilisation may be regarded from the economic point of view as a progressive development of these factors and an accentuation of their importance in economic activity.

In the development of the increasing concern of economic activity with the future agriculture has unquestionably been the chief factor. That a man must sow if he would reap has become symbolical for the whole of economic activity. Agriculture demands a continual care of the soil, and it therefore compels an activity that must look far into the future for its goal. The dwelling-house has had much the same significance. The need of a good house could only be met in an economy that looked far ahead. In a still higher degree must economic activity be determined by aims that lie in the future when there is question of the very durable and expensive equipment needed by modern industry, especially the transport industry. Such factors have necessitated an increasing preoccupation with the future. The desire to take into account objects lying in an ever farther future has been gradually trained in the severe school of the economy, and it has been further encouraged by the evolution of private ownership. The right of inheritance also has brought into the sphere of economic motives certain aims which lie beyond the lifetime of the men engaged in the economy. The most farseeing regard for the future is possible to the permanent and economically very powerful organisations which are characteristic of modern times: large limited companies, and especially States.

Although the sphere of the human activities which are to be assigned to the economy must be extended as far as is done here, these activities are, nevertheless, only to be regarded as economic under one aspect. All of them have other aspects—technical, moral, and æsthetic. Waterworks, cooking, music, all have their particular technique, important and interesting for those concerned, and may be considered from the point of view of their hygienic or æsthetic or other effects.

Economy means, however, an effort which is common to all these activities, regarded from a certain standpoint. This common element, which makes the activity specifically economic, is the condition under which every economic activity is conducted: that there is a certain restriction of the possibility of totally satisfying all needs. It is true that certain needs may be met without limitation; as is the case, for instance, with the need to breathe. But this excludes them from the sphere of economic activities. We give the name "economic" only to those activities which are conducted under the condition that the possible satisfaction of wants is limited. As the means of satisfying wants are usually available only in a limited quantity, whereas the wants of civilised human beings as a whole are unlimited, the means are usually *scarce* relatively to the wants. It is only means of this kind that pertain to the economy: only scarce means are economic means. Hence the entire economy is conducted on the understanding that the means are scarce; it is, in this sense, governed by the "principle of scarcity." The specific task of the economy, therefore, is to secure as well as it can an adjustment between the wants and the means of supplying the wants. In the measure in which it succeeds in doing this we speak of it as a sound economy.

This task may be accomplished in three different ways: first, by eliminating the less important wants and so restricting the total wants; secondly, by making the best possible use of the means available for the purposes in question; and thirdly, by increased personal exertions.

The restriction of wants assumes a different character according to the conditions which make it necessary. If there is a supply of means of satisfying wants that must suffice for a certain time, it is the duty of the economy so to distribute these means over the period that the satisfaction of the needs is spread fairly uniformly over the period. There may, perhaps, be a temptation to use the means extensively at once, so as to get for a time a relatively generous satisfaction of wants. That would, however, mean a worse state of things in the later part of the period. The economic task is so to control the wants from the start that the available means will last for the whole period. We call this "economising" with the means. For instance, the harvest of a self-contained community must, after deducting a certain amount for seed, suffice for the whole subsequent year, and must therefore, if it is not abundant, be distributed evenly in some way over the year. This is an act of economising, and at times it may test the character of the community very severely. It is the same, under modern conditions, with workers or officials, whose wages are paid periodically. The wage must suffice for the whole period, and so the various expenses must be spread over the period, and the wants correspondingly restricted.

When we regard an economy as a whole, it will be found to have means to satisfy wants that can be used for several different purposes. With the available means, therefore, different wants can be met in different proportions as is thought advisable, and there must be a certain selection of purposes to which the available means are to be applied; in other words, what we call the "economically best" or "most economical" use of the means must be aimed at. The economic task is then to secure a certain equality in meeting the various needs, and this means that the various needs must be to some extent equally restricted.

Thus a less important need must not be met in preference to a more important, and a need that is in itself important must not be so exclusively regarded as to neglect others. A sound economy must make a certain very general, possibly unconscious, classification of needs according to their importance. In this classification different degrees of meeting the same need are conceived as different needs, and are put at different places in the arrangement of the needs. For instance, in a self-contained agricultural economy, the provision of means of living may be at the moment the chief task of the economy. When this need has been met to a certain extent, other wants—better houses, new clothes, etc.—may for a time be the most pressing. When these are satisfied, the economic effort may, perhaps, be directed to securing a better provision of the means of living; and regard for other needs will always mean that there can only be a certain degree of satisfaction of these wants. This relatively equal restriction is one form of economising with the available resources. We may call this need of an equal restriction in the satisfaction of wants, both in respect of time and the various kinds of wants, the "principle of equality in the satisfaction of wants."

The second way in which the economy may discharge its task is an effort to attain a certain purpose with the smallest possible means. This "principle of the smallest means," as we may call it, leads to a very careful selection amongst the technically possible methods, and is the guiding-star of a well-organised economy. The whole of modern industry and the whole organisation of modern business are shaped by the pressure of the need to be economical in this sense. If a want can be met approximately equally in several different ways, the economic task is to find the way in which the object can be attained with the least possible use of resources, although it may mean subsidiary modifications in the degree to which the need is satisfied. The need of food, for instance, can be met almost equally well by several different kinds of food, and to choose the cheapest is to act on the principle of the smallest means; although certain less important needs of the sense of taste may have to be ignored in doing so. In such cases we cannot draw a sharp limit between the principle of equality in the satisfaction of wants and the principle of the smallest means.

These two principles are the essential elements of the general demand for "economising" in human actions.

If we suppose that these two conditions are realised, there can only be a further increase in the satisfaction of wants by making greater exertions and sacrifices; in other words, by greater efforts on the part of individuals. If these efforts are felt to be a burden, and according to the degree in which they are felt to be burdensome, the inconvenience must be weighed against the advantages they promise to secure. The economy must be conducted in such a way as to secure the best possible general advantage. This means an enlargement of the need for economising. In a preliminary survey of the human economy we must take it for granted that individual exertions are available to a definite extent. This assumption we will vindicate in the First Book. But we must then investigate the conditions under which an increase of these exertions by the free will of the members of the community can be secured.

We have now described the requirements of economy as far as it is possible in the introductory stage. We shall deal later with their nature and consequences. The general requirement—that in given conditions the best possible satisfaction of needs shall be effected—we will call the "general economic principle."

In real life, of course, this principle is not accurately observed. What is done is often very uneconomical. An equal distribution of the means for satisfying wants according to time and the various classes of wants is an ideal that is, perhaps, never perfectly realised, and from which actual life sometimes departs considerably. The young student or artist often spends in a few days what ought to last a month or longer, and then often has a very bad time. There are whole classes of women who usually spend so much on clothes that there is not enough left for proper food. We see from experience also that the principle of the smallest means is very imperfectly carried out in daily life, and is only properly realised in certain model businesses. There is just as little sound economising in the use of one's own powers. We see, on the one hand, a man working himself to death to get money which brings him personally very little pleasure; on the other hand, the idler, who may be in poor circumstances, but is incapable of the sustained exertions that would be necessary to raise his standard of living. In such cases there is not a proper consideration of the relative advantages of leisure and the satisfaction of wants.

Hence what distinguishes an economy from other kinds of human activity, or, rather, characterises a special aspect of human activity, is not that men act in accordance with the economic principle, but that their conduct can be judged from this point of view, and that, however they may act, the entire economy is governed by the principle of scarcity—that is to say, is subject to the unavoidable necessity of adjusting the needs to the means of satisfying them. Economic action will only help to bring about this adjustment in the most profitable manner. But, whether it is done advantageously or not, it has to be done.

A science that takes as its subject the actual economic life must view it as a whole, and try to describe and explain it as it actually exists. If one wanted to consider only "rational economic conduct," it would be difficult to draw the line. Carrying out such a plan strictly would in the end yield an abstraction without much resemblance to the reality. In marking out its subject, therefore, economic science has not to look to the economical or uneconomical character of human conduct. It does, of course, come within the sphere of economic science to say whether conduct is economical. From that point of view, and that alone, economic science has to test human conduct. Otherwise economic science has to avoid judging conduct from an ethical or any other point of view.

As we have said, the co-operation of men for the satisfaction of their needs requires a certain organisation. The character of this organisation has a very great influence on a large number of economic phenomena.

Certain economic processes are entirely determined by the form of the organisation of the economic life; others are in substance independent of it, but are influenced by it in their external features. It is important in economic science to describe as such the processes which are essential to every economy, and also to point out the more or less relative independence of economic phenomena of the forms of economic organisation. When this is not done, the impression is apt to be given that the economic facts are determined entirely by the particular organisation of the economy, and have no inherent necessity. It is obvious that this conception loses sight of the most important essentials of the economic life, as we constantly see in actual life. In face of the great looseness of popular ideas, and even of political discussion, of economic questions, it is the main task of science to ascertain the *economic necessities* and show how man in his economic action depends upon these necessities.

In the first chapter we will confine our investigation to the processes which are common to every economy and thus get a general idea what an economy means. For that reason we make no assumption here as to the organisation of the economy. What we have to say applies to every form. We have merely to assume here—and throughout the work—that the economy under consideration is complete, and that all its processes are conducted entirely within its own limits; in other words, that it is a self-contained, externally isolated, economy.

§ 2. THE MEANS FOR SATISFYING WANTS.

The means for satisfying wants may be either *material goods* or *services.*

Material goods may be either *consumable goods* or *durable goods.* By the former we mean those material commodities which are used up in a single service—that is to say, which then cease to be goods of the same character. Durable goods, on the contrary, are those which may be used several times in succession or for a considerable time—that is to say, those which, though they may be more or less worn by use, still, at least for a time, retain their character as goods of a certain kind. This distinction is, as will be realised later, one of the most important classifications in the whole of economic science. It is also one of the clearest. An economic classification can, of course, never be as precise as a mathematical distinction. Even when the categories are selected quite naturally, and the dividing line between them is drawn with the utmost logical accuracy, there will always be cases on the border-line. In this case, however, the distinction between the two categories is sharper than can generally be expected in the sphere of economics. The food I am eating is used up in the process. The definitive use lies in the nature of the application of the food. It can only be of use by being eaten. It is quite otherwise with the plate on which it is served. The plate may, of course, be broken by a clumsy person, but this not in the nature of the use of china. Normally it ought to last several years, even if it is used daily. In this case the distinction between consumable goods and durable goods is as natural as it is clear and precise. Some durable goods have a very short life, but that does not alter the fact that they are quite definitely distinguished from consumable goods. Gloves, for instance, are worn out rather quickly, but their utility does not consist in their being worn out. They have the same utility if they are kept unchanged for some time. Coal, on the other hand, has a utility only in so far as it is used up in burning. It may be several hours before the coal I have put on my fire is used up, but every calory of heat produced involves the use of a precisely corresponding quantity of coal. There are, however, commodities which have different uses, and they may be consumable goods in one respect and durable goods in another. Cows, perhaps, are the best instance. As cattle for slaughter, they are consumable goods: as milch cows they are durable goods.

There is no such thing as consumption in the material sense. It is an economic conception. In this sense, moreover, consumption does not mean merely eating a thing or burning it, but any use of a thing which involves that it shall cease to exist as a good of that particular character. Thus all material that is used in the making of durable goods is used up as such. It can no longer, at least as long as the durable good lasts, be used as material. The steel that is used in making locomotives is used up *as* material, although it survives materially in the locomotive, and, when the locomotive is worn out, it may find some use as scrap iron. It is clear that all such materials must be considered consumable goods. The same must be said, of course, of the materials used in making consumable goods—the flour, for instance, of which bread is made; as flour it is used up. We may, if we like, distinguish the materials which, when they are used, are embodied in another commodity as a special group of consumable goods. We should then describe the others as consumable goods in a more special sense. The matter of them does not go out of existence in the physical sense, but it is lost, wholly or in part, in the economic sense. Instances of this kind are food and drink, coal, machine oil, etc.

The distinction between consumption goods and durable goods is based essentially on the manner of using them, but also as a rule, though not necessarily, on the physical character of the goods themselves.

Services are rendered either by individuals or by durable goods, and are therefore either *personal services* or *uses of durable goods.*

Amongst personal services the most important is labour. There are, however, as we shall see in the Second Book, other kinds of personal service, which are of interest to the economist: the act of saving, for instance, and in a certain sense the service of the employers. Labour or work may be either mental or physical; but the distinction has no great economic importance, and it is impossible to draw a sharp line between the two. Certainly there is a wide difference between the work of a scientific thinker and that of a road-mending labourer. Still, all "manual" work requires a certain degree of mental work; and in some kinds of manual work the mental element is of a fairly high quality: for instance, supervising complicated machinery, setting up the type of scientific works, especially in a foreign language, and so on. On the other hand, certain kinds of office work make very slight demands on mental activity.

Since, as we have already said (§ 1), the act of satisfying needs is not itself to be regarded as an economic activity, we must distinguish from the "personal services" under consideration here all those activities which are directly and necessarily part of a man's satisfaction of his own wants.

The uses of durable material goods form a very important group of means of satisfying wants. It includes first of all the use of land and soil, then of dwelling-houses, factories, machinery, and all the other produced material goods which are used so extensively in modern industry. These uses of durable goods are as such means of satisfying wants. The durable goods themselves are only such means in so far as they gradually and successively yield the uses of which they are capable.

Certain durable goods do not last long, and can therefore render only few services. Others last a very long time, if not for ever, and can render an indefinite amount of service. The essential difference between the material goods and their uses is especially clear in these cases of very long duration, but it exists even in the case of commodities which do not last long. We shall see later how very important in economic science this distinction between a commodity and its use is. Here we need only point out that the distinction is peculiar to durable goods, which in this respect differ plainly from goods for use. As far as the satisfaction of wants is concerned, the consumable commodity and the use of it are the same thing.

Material goods and services fall under the common heading of "goods." Goods come under the consideration of economics—they are economic goods—only when they are scarce. For it is, as said in § 1, essential to the idea of an economy that the means of satisfying wants shall be available only in a limited quantity: that there must be some "economy" with them. Goods which serve to satisfy wants, but are not scarce, are not objects of economic action, and are therefore not considered by economic science. There are, however, very few such goods. The air we breathe is the most familiar example. The water used by a ship in its boilers is freely available, and there is no need to economise with it. In certain, but relatively few, cases the same may be said of drinking water.

As a rule there is a certain scarcity of goods. This scarcity is, as we saw, the fundamental condition of every economy. The scarcity of a commodity is defined by two circumstances: the article must be available in a limited quantity, and for the satisfaction of men's wants it must be possible to use the article advantageously in a quantity greater than what is available. Hence economic scarcity is an entirely relative idea; it consists wholly in a relation to men's wants.

The means of satisfying wants may also be divided into direct and indirect. Direct means are those which serve immediately to satisfy wants. They may be either material goods or services. The former are consumable goods, such as bread; the latter may be either personal actions, such as the service of a masseur, or the services of durable goods, such as the uses of clothes or tramways. All these may also be classed together as "ready goods." Indirect means of satisfying wants are those which have to be used to get the direct means. They may be, for instance, materials, like cotton; goods for use proper, like coal; services of durable goods, such as agricultural land, the work of machines, or the transport of goods by railways; or personal services, work, etc. Durable goods themselves are on that account to be described as indirect means of satisfying wants, as they serve to satisfy wants, not of themselves, but by the services they render. Moreover, the distinction between direct and indirect means is related to the use that is made of them, not necessarily to their inherent character.

Many goods may be used to satisfy wants either directly or indirectly; as is the case with coal, for instance, and generally with human labour.

The nature of the scarcity of a good is mainly determined by the way in which its quantity is limited. In certain cases the quantity is given for the moment, but it can be increased by a proper direction of the economic activity. In these cases the scarcity of the good is not independently determined, but is settled by the limits of this power to increase it. These limits again are, as we shall see in the next section, determined by the scarcity of those indirect means of satisfying wants which it is impossible to augment.

Apart from these cases, goods are either in existence in absolutely limited quantities or their supply can be increased by greater exertion on the part of the members of the community. In the latter case the scarcity of the good is determined by the conditions under which such greater exertions will be called forth.

§ 3. Production.

The scarcity of a material good is sometimes absolute, as the existing supply of it cannot be augmented or, when it is used up, cannot be replaced. As a rule, however, it is possible to produce new articles of the same sort, and thus to augment the supply or replace the waste. Since a good which is identical with another existing or used-up good clearly cannot be produced, the scarcity can only be overcome if various specimens of the same kind of article can be substituted for each other—that is to say, when the demand looks to a class of articles, not to an individual article. An old painting may be copied, but if the demand is for the original, the painting is irreplaceable. Sometimes a thing that in a general way can easily be replaced has a purely emotional value for the individual owner; he cares only for that particular individual article, and will not have any substitute, however closely it may resemble it.

Apart from these circumstances, the replaceability of a material good depends entirely on the technical possibilities of producing one like it. This is not possible, or only in a qualified sense, in the case of land or given materials in nature. Most material goods are, as we say, reproducible. The activity which brings into being new goods for the satisfaction of human needs is called *production.*

The production of new material goods is, of course, not a creation out of nothing, but a re-shaping of material found in nature. The materials which cannot be produced by us, or are not so produced, as they are easily to be got directly from nature, are called *raw materials* in the strict sense. Getting these raw materials from nature demands a certain amount of economic activity, and this is to be included in production. Raw materials which can be got without such activity are available in larger quantities than are needed, and are therefore not economic goods. When we examine the other materials, which must be secured with some effort, we find that some of them are present in nature in very small quantities, and that we are compelled to be very economical with them. Others—the greater part, in fact—abound in nature, but the local or industrial difficulties of securing them are so great that they are available for further production only in limited quantities. Coal, for instance, if we consider the world-supply, exists in quantities that must be regarded as very abundant relatively to the actual use. But the coalfields are very unequally distributed, and some are so far away that we cannot consider them in connection with the satisfaction of our needs, as the difficulties of getting the coal are too great. Even from the coalfields that are being actually worked the coal can be got only with labour and certain sacrifices. For these reasons our supply of raw materials is always limited. And this sets a certain limit to our capacity to produce material goods.

Besides raw materials we need in production also the use of the durable goods which nature provides. These durable goods are generally classed together as "land," though they include, for instance, waterfalls and rivers that serve for transport. The most important kind of land, that which is or may be used in agriculture, is so abundant, when we take the whole earth into account, that it is probably more than enough for the present needs of the race. That there is, nevertheless, a scarcity of it means, mainly, that there are local or technical difficulties about utilising the existing land. As, however, these difficulties can be overcome to a certain extent by productive activity, the scarcity of agricultural land is not absolute. This applies still more to urban building land, which is essentially an outcome of man's productive activity. Thus the scarcity of land is mainly due to the difficulties of making use of it. This scarcity is the source of a further independent limitation of the production of material goods.

This production further requires, as a rule, the use of machines, factories, transport equipment, etc., and of prepared materials or half-manufactured goods—in a word, of material goods which are themselves the result of production. The scarcity of the existing supply of such goods at a given moment is a new limitation of the possibilities of production. It may be urged that, as these means of production can themselves be produced, there is no definite or independent scarcity of them. But the production of new material means of production takes time. Hence the existing supply at any given time is undoubtedly a definite limitation of the range of production.

It is also to be noted that the disposition to use means of production for the production of material goods which in turn are to serve for further production, not for the immediate satisfaction of wants, must clearly be limited; and that this means, in the long run, a limitation of the production of material means of production and therefore a limitation of the productive capacity generally. This limitation is, as we shall see, based upon the scarcity of that personal service which we call saving.

Finally, the limitation of the human labour available is obviously an independent and very general restriction of the productive capacity.

We find, then, that the scarcity of the various means of production implies a definite limitation of the possibility of producing new material goods. Hence, production does not rid us of the scarcity of the satisfaction of human needs, but only leads it back to the scarcity of the means of production.

The means of production, especially human labour, may be, as a rule, used in very different branches of production. This is a very important fact for the entire human economy. The scarcity of a particular kind of good is, thanks to it, not as a rule determined by an absolute scarcity of the means of producing that particular good, but by the amount of means of production allotted to that particular branch of production. It is, therefore, to a very great extent relative. The relative scarcity of the various kinds of commodities thus depends upon the distribution of the available means of production amongst the various branches of production. This distribution must be regulated with a regard to the scarcity of the various means of production on the one hand, and the importance of the different demands on the other. Every economy is, in those circumstances, essentially an economising with the means of production, and a rational conduct of the economy must consist to a very great extent in the proper distribution of the means of production amongst the various applications of them. Precisely because the means of production can serve so many different purposes the possibilities of satisfying needs according to their various characters are so very great. Still, the scarcity of the means of production is always an essential restriction of the total capacity to satisfy wants.

In this description of the economic activity which we call production we have, for the sake of clearness, only considered the production of material goods, a process of reshaping and refining of material. It is possible to keep the word in this narrower sense, as merely the working-up of material. But from the economic point of view there is no reason to restrict the idea of production in this way. Economically the transport of the material and of the finished goods cannot be separated from the working-up. This will be realised best, perhaps, by reflecting that in the manufacturing process itself there are a number of transport-operations—in the pig-iron industry, for instance, or agriculture, or forestry. If we conceive the entire production of material goods for the satisfaction of needs as one process, the innumerable transport-operations within the process cannot be separated from it. In that case there is no occasion to exclude from the productive process the ultimate transport-operations which convey the goods to the consumers. Those economic activities which, in different economic organisations, have the task of regulating the movement of goods from one part of the total economy to another—which we now call commerce or trade—may be distinguished from the productive process in the narrower technical sense, but as the dividing line is very difficult to determine, it is better to conceive them as a part of the great process of production which has to put at men's disposal the means of satisfying their wants. Production as a whole is, therefore, to be regarded as a special side of the human economy—the creation of goods. The economy is a more general conception, as, besides production, it includes the regulation of consumption and of the services of individuals. It represents the entire activity which adjusts the satisfaction of wants and the means thereto.

Production in this broader sense is not confined to the creation of material goods. All services that directly satisfy needs, and which must, in virtue of our definition (§ 1), be regarded as economic, must be conceived as productive activities and therefore must be described as integral parts of the total process of production. As productive activity we must therefore count, not only the exertions of agricultural and industrial and other workers, but also the work of domestic servants, teachers, physicians, etc. All have a share by their work in the great economic process of satisfying needs. This process is in reality so unified, the various parts of it are so much interconnected, that to exclude services which directly satisfy needs does not seem to be justified by the facts.

This definition of productivity is much disputed. According to the classical political economy only the work which is involved in creating material goods was to be regarded as productive. All services which directly aim at the satisfaction of human needs and are useful to consumers without the intervention of material goods were described as unproductive. This classification must be entirely rejected, as it is apt to give vague ideas that there is a greater economic importance in the activities which are described as "productive." As a matter of fact, the terminology is based upon the idea that the production of material goods is the general aim of economic activity, and therefore services which are not embodied in material goods are at the most to be described as "indirectly productive"—that is to say, productive only to the extent to which they can further the production of material goods. This idea clearly fails to understand that the satisfaction of human needs is an independent aim, and it implies a subordination of man to material goods that is not openly acknowledged, but is, nevertheless, latent in the theory and a cause of great economic confusion. Whether or how a service promotes the production of material goods is, or should be, a matter of no consequence as far as concerns the question whether it is to be regarded as economic and productive. The only essential point is that the service shall directly or indirectly help to meet a human need. When it does this, it must, with the limitation indicated in § 1, be regarded as economic and productive.

This is the only way to get a sound definition either of an economy or of economic science. There is no force in the objection that this definition of an economy brings all sorts of disciplines—medicine, pedagogy, art, etc.—within the sphere of economic science. Even an economic science restricted to the production of material goods would not include the enormous mass of technical knowledge needed in the modern industrial production of material goods. Economic science can take into consideration the entire human activity that aims at facilitating the satisfaction of needs without going any further into what might generally be called the technical side of this satisfaction of needs than is necessary for the purpose of a purely economic inquiry. Every human activity that aims at meeting human needs has its economic side, and to that extent it falls within the domain of economic science. This science need never fear that it will pass its natural limits as long as it confines itself strictly to the economic side of human activity.

To divide economic services into productive and unproductive, according to their relation to material goods, would lead to most peculiar subdistinctions. All personal exertions that relate to the improvement, transport, and distribution of material goods would, of course, have in all circumstances to be counted productive. It is difficult to see how anyone could then exclude domestic services, as the most important of them, cooking, must be regarded as a continuous elaboration of material goods. One has only to try to imagine how it would look to divide the work of our domestic servants into "productive" and "unproductive" according to its relation to material goods! It would scarcely be possible to sustain a claim that there shall be a direct relation between services and goods. In a large factory, for instance, there is a good deal of work and equipment that is only indirectly connected with production proper, yet is very important to the workers—the cleaning of the rooms, the absorption of dust, the installing of baths, etc. It would be difficult to avoid counting these necessary operations amongst the productive services. Even the work of the inspector and doctor of the factory would have to be called "productive." Where, then, shall we draw the line? Large transport businesses convey both passengers and goods. Must the carriage of passengers be regarded as unproductive, and the carriage of goods as productive? How shall we then classify the work of engine-drivers and of the staffs of ships? The workers employed in a town waterworks must be considered "productive," since they provide the inhabitants with the material good, water. It is the same with gas-workers. What are we to say, then, of the electrical workers? They do not provide any material good, but merely render the immaterial service of lighting and heating, and they must therefore be classed as "unproductive." The fact that a division of services into productive and unproductive, according to their relation to material goods, raises these great difficulties shows clearly that the distinction does not correspond to any essential difference of services from the economic point of view, but is factitious and unprofitable. Any man who pushes the consequences of it so far as to exclude "unproductive" services entirely from the sphere of economic activities and economic science will find himself landed in obvious absurdities.

§ 4. The Continuous Process of Production.

It is customary in economic science to regard production rather from a materialistic point of view, as if it were the object of the science to inquire into the origin of material goods, and to follow the various stages of their transformations during the process of production, and finally to consider the consumption of them. This method of treatment is unquestionably responsible for the refusal to regard services that are not embodied in material things as productive or economic and all the difficulties that are thus raised. It has influenced the whole arrangement of manuals of the science, as the authors felt themselves compelled to consider the technically successive stages of the productive process in the same order in economic science, and so begin with the first elements of production and end with consumption. It is, in particular, responsible for the entirely wrong picture of the economic process of production, its conditions and means, which still for the greater part dominates economic science.

Since economic science tried to describe the process of production as the technical history of the origin of the various goods, the technical origin of each material good co-operating in the productive process had to be investigated, and then, of course, every product resolved itself in the ultimate analysis into labour and the materials freely afforded by nature. This was made the basis of a theory according to which labour is the sole means of production, and all wealth is created by labour. We shall consider this theory, which has played as considerable a part in economic science as in socio-political programs, more closely at a later stage. It is clear, however, how much the theory was bound to be supported by the technical view of production which we are considering.

The fact that all production takes time is of great importance to every economy, and therefore to economic science. It has led the science to elaborate the idea of "period of production," and experts on interest, in particular, have given a good deal of attention to this conception. But as long as the idea of production we have described is retained, the part played by time in production must remain obscure and vague, as it is impossible to assign a point at which the production of a material good, conceived in this sense, begins. At every stage in production the co-operation of pre-existing material goods, either durable goods or goods for use, is assumed, and, if the origin of these goods is to be counted in the productive process of the final product, one never gets to the starting-point of the entire productive process. In these difficulties we see clearly how entirely hopeless is the attempt to trace the productive process back to its technical commencement.

An economic consideration of production must start from the fundamental fact that the satisfaction of the needs of humanity, or of any self-contained group of men, must be continuous, and that, therefore, production is a continuous process. This process as a whole must be the subject of the economic study of production. It must be represented according to its features at a given moment, and the conditions under which it can go on unchanged as it is at that moment must be assigned. These conditions are a necessary presupposition for a continuous satisfaction of needs, unchanging in its content and range, and they therefore represent fundamental factors of the economy. In certain cases also the conditions of some measure of growth of the economy must be studied, and these must be regarded as fundamental factors of an economy that is undergoing some sort of development.

In this way of looking at the matter there is no place for an inquiry into the circumstances in which the actually existing material goods came into being, or into the forces which were at work. All these questions belong to history. They may be material to economic history, but they are economically negligible, or they have, at all events, no direct significance in the ordering of the economy. This, of course, does not prevent the history of an ancient building or the origin of a painting from having a considerable influence on the way in which contemporaries appreciate them, and therefore on present economic action. But these elements of the past act only through the medium of the feelings of living men, and do not call for consideration in an inquiry into the possibility of satisfying wants by means of production.

Here we come to the general principle, fundamental in all economic consideration, which is contained in our definition of an economy, and the importance of which will be shown more clearly as we proceed—that the economy is essentially an activity that looks to the future, the past having logically no part in it. How an actually existing good came into being is, in virtue of our general conception of the nature of an economy, a matter of indifference. This observation shows how utterly futile the hitherto prevalent view of production, with its analysis of the technical evolution of goods, must be in economic science.

In real life production is always a continuous process, always complete in its various partial processes, and always beginning over again: a process, therefore, which after a certain time will present the same picture as now, assuming that the range of the process is not enlarged and the methods of production not altered. In other words, the process of production as a whole does not share the movement of the material that rises from stage to stage of advancement until it issues from the productive process as a finished article. The process of production has not a beginning and an end in the same sense as the story of the gradual shaping of a concrete piece of material; it may remain itself unchanged in spite of the continual production of articles. In a process of production of this kind we find at any given moment a good represented in all its various stages of manufacture. The raw material, the half-manufactured article, and the finished product all exist together, and in such quantities that the production can be continuous, though it may vary in volume. The composition of this mass of goods is only changed by production in so far as the productive process itself is changed.

There are, of course, inequalities in the continuous process of production. This is a correct picture of the productive process in industry proper—say, the iron industry. Fresh ore and coal are brought daily and hourly from nature's stores. Pig-iron is produced in a steady stream and converted into steel; and at the same time there are the various iron and steel products at every possible stage of manufacture. In this case, and under stable conditions, the productive process may run so perfectly evenly that changes of its contents need not be taken into account, at least if we survey a large industrial region.

It is not the same with agriculture. Here the entire production is so dependent upon the seasons that it begins again once every year. The mass of goods in the actual process of production changes its character in the course of the year. But if one takes a sufficiently long period, it is possible to ignore the various phases of the productive process and the alteration in its content, and concentrate one's attention on the production as a continuous process, which may be invariable or may be subject to changes in regard to extent and method. The various phases of agricultural production disappear still more completely when one considers the entire world-production—say, of wheat. Wheat is grown in such different latitudes in the northern and southern hemispheres that the unequal distribution of the harvests over the year is fairly neutralised, though not wholly eliminated. This adjustment continues in the subsequent stages of the progress of the wheat. The European demand for wheat is met by a practically continuous stream of cargoes of wheat throughout the year with a fair amount of uniformity. Naturally, the varying phases of the agricultural productive process, on account of the change of seasons, must be taken into account, and their effects examined by economic science when it goes into details. But when, in order to get a general view of the essentials of the economy, one wants to study an economy sufficiently simplified by abstraction, yet reflecting the inherent nature of the economic processes as faithfully as possible, there can hardly be any doubt that the continuous process of production, as it is here described, is the correct abstraction.

This process of production is, however, fairly complex in any general features that correspond to the reality. For scientific purposes it is advisable to take first two simplified cases that are particularly important in forming a correct idea of the essential economic facts and processes, and make these the subject of a more thorough inquiry. These are, first, the case of the stationary process of production; secondly, the case of the steadily growing process of production. The study of the first will show us the conditions of economic equilibrium in a producing economy, and will enable us to define with otherwise unattainable clearness certain phenomena that are fundamental to every economy. The study of the second case will elucidate the conditions of quantitative economic progress in the simplest circumstances, and will thus enable us adequately to characterise certain phenomena which are especially connected with economic progress.

§ 5. The Stationary Economy.

We will, therefore, first simplify the matter by supposing that the social process of production remains completely unchanged as time goes on. We will suppose that the number of men in the economy in question and their individual needs—therefore the total needs of the economy—remain constant. We then have a stationary economy. The satisfaction of wants now goes on without change of form or extent; all the economic phenomena remain constant. It is clear that such an economy affords the best opportunity to study the general and fundamental economic phenomena.

In the static process of production there is at a given time a definite volume of durable material goods co-operating in production and of materials and consumable goods in various stages of preparation, and this volume is the same at all times. The existence of this quantity of goods is a necessary condition for the continuance without change of the process of production. It is, therefore, the business of the stationary economy to keep this quantity of goods unaltered. Production in the stationary economy is, consequently, a process that, first, maintains the total sum of the material goods included in it, and, secondly, constantly provides finished material goods and services for the satisfaction of men's wants.

We have now to see how this is accomplished. In regard to the first task, it is important to bear in mind our division of material goods into durable goods and consumable goods. We have, therefore, first to inquire how the amount of the durable goods existing in the process of production can be kept invariable. We may at once exclude land, as we may assume that in its economically important features it remains unchanged, and so here there is no task.

The productive process, as we have defined it (§ 1), reaches as far as the point where the immediate satisfaction of wants begins. We have consequently to settle what durable goods are to be regarded as within the productive process. Primarily these are all tools, machines, and buildings that are used in production; then ships and other means of transport, lighting, equipment, telephones, etc., or durable goods that co-operate in production, without regard to whether they help in the creation of material goods or are of service in the direct satisfaction of wants; finally, houses and other durable goods that are of service in the direct satisfaction of wants; but not personal belongings, such as clothes and so on (compare § 7).

This should sufficiently define what we mean by "durable goods in the process of production." Setting aside land, the rest represents the produced durable goods in the process of production. To these we give the name of *fixed real capital.*

The first question is then: How is the fixed real capital kept unchanged through the productive process in a stationary economy? The durable goods in which fixed real capital consists are for the most part apt to be used up rapidly. The loss may be moderated by a careful use of them, but as a rule it is impossible to prevent them from being worn out and incapable of rendering any further economic service. They then disappear from the store of durable goods. Old houses are broken up: old machines are scrapped. If the supply of these goods is to be kept unchanged, new goods of the same sort must be produced, and, in the stationary economy, at the same rate as the old are worn out. Let us suppose, for instance, that in a self-contained economy all the houses are of the same type, and all last a hundred years; and that the supply is kept at the same level by constant building. In that case we have at any given moment a group of a hundred houses, the oldest of which is a hundred years old and ready to be broken up, the newest only built in the previous year, and the others of all ages between the two. This group of houses is kept unchanged by the productive process by building one new house, and breaking up one old one, every year. The other houses grow a year older every year, but the building of a new one means that at the end of the year the supply is just the same, in number and graduation of use, as it was at the beginning of the year. If we take a stationary economy of sufficient size, it is clear that the supply of durable goods can be maintained practically unchanged by mending and new production—in a word, by the current productive process. This process, by which fixed real capital is maintained unchanged in a stationary economy, is called the *reproductive process of fixed real capital.*

Turning now to consumable goods, we have first to settle which of these are within the process of production. First, we have all materials that enter the process as raw material obtained from nature, undergo a series of changes, and finally emerge from the productive process as constituents of durable or of consumable goods. Consumable goods leave the productive process, as they are used up; they are either used in the productive process itself (coal and machine oil) or in the direct satisfaction of needs (bread, etc.). If production continues on the same lines, and is constantly repeated in the same forms, the total supply of material goods in a stationary economy will be kept unchanged. Iron, for instance, will be used daily for different purposes in a certain quantity, and this means a corresponding daily supply of iron ore; and the material that is in an intermediate stage goes a step forward in the process of manufacture. Thus the total material in this branch of production remains unaltered in quantity and quality. Every day finished consumable goods pass into consumption from the productive process, or are definitively used up in the productive process itself; but at the same time the total amount of intermediate products moves on a step, and new production begins.

The effect is that the amount of intermediate products remains constant, and that every day the same quantities of consumable goods are available for the productive process or for consumption.

The final result is, therefore, that the total volume of materials, half-manufactured articles, and products in all stages, and of consumable goods employed in the production itself, remains constant in a stationary economy. This volume of goods we call the *circulating real capital* of the economy. The process by which this is kept invariable we call the *reproductive process of circulating real capital.*

The total sum of fixed and circulating real capital, or of all the material goods in the productive process except land, is the *real capital* of the economy; and the process by which this is kept constant is the *reproductive process of real capital.*

The total amount of the material goods of an economy is called its *real wealth.* Real wealth includes land, as well as real capital, and also the durable goods which have gone out to the consumers.

On these lines production in a stationary economy is a process that constantly takes care that the material means of securing its continuance unchanged are kept invariable; a process that maintains itself, and at the same time provides a steady and invariable stream of services and material goods for the satisfaction of human wants. This stream of services and goods, which the members of the community receive from production for the satisfaction of their wants, is called the *real income* of the economy.

Thus the real income consists partly of the services of other individuals (such as doctors or domestic servants) which directly help to meet wants; partly of consumable goods (such as food, etc.); partly of the utilities of durable goods which are to be regarded as belonging to the productive process (such as the services of the dwelling-house, of passenger traffic, etc.); and partly of durable goods which, when they are ready, pass into consumption and can no longer be included in the process of production (clothes, for instance).

In economic science it is important to make perfectly clear the relation of all our ideas to time. A good deal of confusion and numbers of superfluous controversies can be traced simply to the failure to attend to the very important temporal aspects of economic ideas. Above all it is necessary to distinguish whether an economic conception is related to a point of time or a period of time. It is the former with the ideas of real capital and real wealth. If we want to show the amount of material goods in an economy, we must clearly choose a particular moment for the inventory. An inventory of this sort will only find a certain quantity of material goods in the economy, but not services. The material good exists as such at a given moment, but the service relates to a period of time. At the given moment there are only the individuals and goods which render service. That is why services are not a part of the real wealth, but are a part of the real income. The services which directly satisfy wants create nothing that could be included in the inventory. It would scarcely be an error to connect the theory of the unproductiveness of such services which we criticised previously with this circumstance.

The real income relates expressly to a certain period of time. The amount of the services and material goods which pass from production to consumption can only be assigned in relation to a shorter or longer period of time. We may, for instance, take the period of a year, and speak of the year's income.

The real income of a stationary economy—calculated annually, let us say—can only be maintained on condition that the productive process continues unchanged. But this unvarying continuance of the productive process to keep up the existing real capital is by no means a mechanical necessity. It requires that production be regulated in that sense. From this point of view the entire stationary economy is the outcome of a deliberate decision of the members of the economy. Hence the requisite conditions of the continuance of a definite and constant real income are as follows:

1. The existence of land and natural materials in certain quantities.
2. The existence of a certain real capital.
3. Such management of the process of production that the real capital shall remain constant.
4. A certain annual amount of work done.

§ 6. THE STEADILY PROGRESSIVE ECONOMY.

The stationary economy is the first abstraction that it is useful to study in order to make clear certain fundamental processes of every economy. There are, however, certain very important phenomena in an economy in general which do not appear in a stationary economy; they are essentially connected with progress, and can therefore only be observed in a progressive economy. We now turn to the consideration of the progressive economy, but it is still necessary to make the very simplest assumptions the basis of our inquiry.

First we have to settle what we mean by "progress." We give the word, in harmony with the whole of our economic terminology, an entirely impartial meaning, as purely quantitative as is possible. Whether a quantitative expansion of the economy, in particular of production, can be recognised as real progress from an ethical and æsthetic point of view is an interesting question, of great practical importance, but it does not come within the sphere of theoretical economics, and so it is not considered here. It is advisable to make this principle, this restriction of the work we have to do, quite clear from the start. Progress is taken here only in the quantitative sense as a movement that takes the form of an increased production.

A general cause of progress in this sense is the increase of population. If wants are to be satisfied to the same extent in an increased population, it is clear that there must be a proportionate increase of production. It is quite conceivable that production may run on the same lines, using the same methods, and that the progress consists merely in enlarging the volume of production proportionately to the increase of population. When the population is stationary, economic progress must result in increasing the production per head, and in an improved satisfaction of needs. An increase of this sort can perhaps be brought about to a certain extent by raising the proportion of work done by each person; but the possibilities of this are clearly very limited. Steady progress with a stationary population is only possible by constant improvements in the methods of production. In that case the entire productive process, and in most cases the character of the satisfaction of wants, are constantly changing. Progress is then a rather complex phenomenon, and our simplifying assumption of uniformity of progress meets with certain difficulties, at least in the present stage of our inquiry. If we want to consider the simplest possible form of economic progress, we must take a case in which production continues on the same lines, with the same amount of work from each person, and is only increased in proportion to the growth of population. If we further suppose that the increase of population is itself constant, we have the simplest case of an evenly progressive economy. Given the annual percentage of growth of the population, it must be taken as a measure for the total increase of the economy, and we may speak of a definite percentage of progress as characteristic of that economy.

If the production is to increase at this annual rate, it is clear that the real capital of the economy must increase at the same rate. Since the real capital remains unchanged as regards its relative constituents the increase is to be conceived as a uniform advance in the volume of each of its constituents. It is only by a growth of this kind that the real capital can keep pace with the increase of working individuals and the proportionate increase in demands for the satisfaction of needs. This increase of real capital is, of course, only possible if production is directed to that purpose. Hence the productive process in the evenly progressive economy we are considering has three different tasks, namely:

1. The maintenance of the real capital at its actual amount.

2. The increase of the real capital by a certain percentage every year.

3. The supplying of the needs of consumers in proportion to the increase in their numbers.

Since the absolute annual increase of the real capital, being an invariable ratio of the existing real capital, clearly increases in the same proportion as the real capital itself, these three requirements make steadily increasing demands on production, and production is distributed in a fixed ratio between the three tasks. And as the various means of production are not directly comparable in a quantitative sense, the principle can only be accurately stated by saying that the quantity of the productive forces devoted to each of the three main objects of production, which, on our assumption, remains unaltered in its relative constituents, must increase at the same rate as the general progress.

Thus in our progressive economy the means of production at any given time are more abundant than they need to be to meet the wants of that particular time. We may, therefore, assume that at any given moment the use of the existing means of production would give a fuller satisfaction of actual wants or, if the satisfaction of wants is unchanged, permit shorter working hours or a reduction of the demands upon the exertions of individuals. Hence the application of a certain proportion of the means of production to the steady increase of the real capital implies a *sacrifice*, and this takes the form of a restriction of the otherwise possible satisfaction of wants, or else an increase of the exertions of individuals beyond what is necessary for the actual satisfaction of their wants. This restriction of the satisfaction of wants, which makes possible a production of real capital for the purpose of increasing the existing supply of real capital, is called *saving*. The increase of real capital, for which productive forces are set free by saving, is known as the *formation of capital in the concrete sense.*

The necessity of saving and of producing capital is, like all the facts and processes dealt with in this chapter, entirely independent of the type of organisation of the economy, and is therefore found in every progressive economy. In a self-contained agricultural economy, for instance, progress is only possible if individual exertions and other means of production (such as horses) are withdrawn from the immediate satisfaction of needs, and used for the augmentation of real capital—raising new buildings, for instance, or breaking up new land. Thus the condition of progress is a restriction of the possible satisfaction of wants, or an effort beyond what is actually required for the satisfaction of wants; in other words, saving, and the application of the productive forces thus spared to the production of real capital or the forming of capital in the concrete sense. The processes here are essentially the same as the corresponding processes in a modern economy comprising a whole country or even the whole world.

It may be said that even in a stationary economy there must be a certain sacrifice in order to devote a sufficient quantity of the productive forces to the maintenance of the real capital unchanged in amount and character. If this were not necessary, there would unquestionably be productive forces set free which would permit at the time a more generous satisfaction of wants. The farmer, for instance, acts in that way, when he gives his whole resources to the current needs of his life, and has no time to keep his buildings in good order. That is how the various States have acted in the Great European War: productive forces were set free for the purposes of the War by neglecting the current maintenance of fixed real capital (buildings, railways, rolling stock, ships, etc.) and failing to replace the circulating real capital (stores of material, cattle, etc.) which was used up. In the long run such an economy must become poorer, with less means to satisfy its wants. The use of the productive forces by which real capital is kept constant and the impoverishment of the economy is avoided, may not be called "saving" in the ordinary use of language; but it is clearly an operation of the same nature as the saving which leads to a real increase of capital. Administering an economy in this way may in some circumstances make very great demands on self-control and regard for the future. However, in order to fix the idea of saving in the economic sense we must keep within the limits already assigned. Saving, in the proper sense of the word, begins with the *augmentation* of capital.

Saving, as we conceive it, consists in a certain allocation of the means of production. This conception of saving is necessarily connected with the continuous economy which is at the basis of all our inquiries. But we often find a different idea of saving. According to this, saving is a certain withdrawal from use of a stock of finished goods, and these are generally thought of as consumable goods; in other words, a certain disposal of a given quantity of articles of consumption in virtue of which some of them may be used and others "saved" —that is to say, reserved for future consumption. This sort of saving is, of course, always necessary when there is a stock of consumable goods which must last a certain time. The use of the stock must be more or less evenly distributed over the whole period. This is particularly the case in regard to the harvest, for instance. The conception of production which we criticised at the beginning of § 4, which follows from beginning to end the technical process by which the individual article is created, may find it natural to direct attention in the study of consumption mainly to the stock of the article created by this productive process and to the gradual consumption of it, and so give prominence to the disposal of the existing supplies of finished goods. But if the economy is conceived, as we conceive it, as a continuous process with essentially the same form and content at all times, it is not so important to consider the existing supplies of finished goods; because in the continuous economy the result of the production is a steady stream of finished goods, passing at once into consumption, not the creation of a definite stock of goods that will afterwards be consumed during a long space of time. The importance of the small supplies of finished goods that may happen to exist in the continuous economy is slight in comparison with the constant stream of such goods, the maintenance of which is assured by production. This is particularly the case under modern conditions of production and transport. In these circumstances a determinate regulation of consumption can only be conceived, in the main, as a regulation of the available means of production. On this conception there is nothing, in the concrete sense, that is being saved; as there is when saving is regarded as a non-consuming of an accumulated store of finished goods. The finished goods which are not consumed in the continuous and properly balanced economy, in consequence of a deliberate restriction of the satisfaction of wants, are not produced at all. There is thus no concrete object to save in the sense of not using.

On the view that saving is a non-consumption of a store of finished goods, the formation of capital in the concrete sense requires some special explanation. It is clearly not possible to augment the existing real capital by cutting down consumption. The concrete formation of capital is on this view of saving regarded as an accumulation in advance of a store of material goods which may later be used in production to maintain those engaged in it, especially the ordinary wage-earners, perhaps also in the shape of material or tools.* This way of looking at the matter is, however, entirely alien to the essential features of the continuous economy. In a continuous and properly balanced economy there is, on the whole, no accumulation of a stock of finished goods, and no accumulation, in the above sense, of materials and tools for use later: at a given moment there are no idle stores of goods which have been accumulated as a preparation for a future process of production. The continuous economy has, as we have previously shown, a real capital which is, normally, always employed. This real capital is in a progressive economy steadily augmented by production; but the various commodities which are thus gradually added to it are not normally stored for the purpose of a productive process which is to begin in the future. They at once enter upon their various functions as real capital, and are consumed, or worked up, or, if they are durable, kept working. Hence the representation of the formation of capital in the concrete sense as an accumulation of goods reserved for future purposes gives a wrong idea of the essential processes of the continuous economy.

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* "A stock of different goods," says Adam Smith, "must be stored up somewhere sufficient to maintain him [the labourer], and to supply him with the materials and tools of his work" (*Wealth of Nations*, Book II., Introduction). Jevons considers the means of sustenance of the worker the one form of capital: "Capital consists merely in the aggregate of those commodities which are required for sustaining labourers of any kind or class engaged in work" (*Theory of Political Economy*, p. 242).

In the evenly progressive economy the regulation of production in general, and the distribution of the productive forces amongst the three different main objects of production, are invariable. Hence there is always the same relative quantity of the means of production, or an absolute quantity which steadily increases with the general percentage of progress, devoted to the augmentation of real capital. Saving is then a continuous process which grows in proportion to the progress of the economy, and has, therefore, always the same significance in the economy. On the earlier theory of saving, this proposition was very difficult to understand. If a stock of goods was saved, it had sooner or later to be used. A continuous saving always increasing in extent and at the same rate without restriction of time must seem impossible on such a theory. Both in science and in popular literature we still often find it said that there cannot possibly be an indefinite saving (that is to say, "storing of goods") on the part of the entire community. It is undeniable that these ideas have had a considerable influence on the appreciation of saving and on economic theory generally. It is, therefore, very important that the real character and function of saving in a continuous economy should be made quite clear. A saving that is not only continuously maintained, but increases at the same pace as production, is not only quite possible, but is an absolutely necessary condition of equable progress in any economy. It is only by saving in this sense that there can be a formation of capital which increases in the same percentage as the general progress, and therefore an equable augmentation of the total real capital and a production and satisfaction of wants in the same proportion.

The idea of real income must be enlarged in the case of a progressive economy. In this case the real income must, in conformity with the general usage of words, be defined as *the sum of the real income that is consumed and the increase of the real capital during the relevant period of income*. The first part of this sum must, in a progressive economy, be taken as the quantity of services and material goods which the progressive production supplies to the members of the community during the income-period for the direct satisfaction of their wants. The second part corresponds to the community's concrete formation of capital. In the evenly progressive economy the real income increases like its two parts, consumption and the formation of capital, at the same general rate as that of the whole economy.

It follows from what we have said that for the maintenance of an income advancing in this way it is necessary that the formation of capital shall advance in the same way: that the productive forces shall be so distributed amongst the various productive tasks as to ensure this formation of capital. This distribution of the productive forces represents, side by side with the individual efforts of the productive workers, the continuous activity that is needed to sustain the progressive economy. Moreover, the existence of a certain real capital at the start—and any particular moment may be taken as the starting-point—must be regarded as a necessary condition of this economy.

Saving, as we saw, always implies a sacrifice, which is made for the sake of progress. In the special case of a progressive economy, which we are mainly considering here, where progress merely consists in an enlargement of the economy at the same rate as the enlargement of the population, the sacrifice of saving is simply made for this increase of the population. This is interesting in so far as it shows that the growth of population costs something more than the bearing and rearing of those children which make up the increment of population. If the satisfaction of the individual's needs is to be kept at a certain level, the real capital must increase at the same rate as the population, and for this purpose a certain proportion of the existing productive forces must be used. Primarily, and generally, this means the building of new houses for the newcomers; but under modern conditions it also means equipping the economy with means of transport, factories, machinery, etc., in proportion to the growth of population. The productive forces that are used for this augmentation of real capital are withdrawn from the satisfaction of current wants, and therefore this satisfaction of wants will at any moment be scantier than it need be if there were no increase of population.

CHAPTER II

THE EXCHANGE ECONOMY

§ 7. Exchange Economy and Monetary Economy.

IN the course of our inquiry it is, as we said, always assumed that the economy is complete—that is to say, that all the economic processes take place within the economy, or, in other words, that the economy is externally isolated and self-contained. This is essentially true of the old type of family economy, or "self-supporting economy," which survived on country estates, largely even in Europe, into the nineteenth century. But in proportion as these distinct households entered into relations with each other, in order to exchange their superfluous products and so satisfy their needs more completely and with greater variety, and still more in proportion as individuals devoted themselves to special pursuits and contributed their services or products to the household in exchange for *its* products, the self-containedness of the household disappeared. The earlier type of household was restricted more and more to purely agricultural production. It was transformed into an economy which could no longer completely meet its wants by its own production, and therefore became a part of a larger economic unit. This larger economic unit consists, wherever the development is complete, of a certain group of individual economies which enter into economic relations with each other, and meet their needs by co-operation and the mutual exchange of services and products. A community of this type is an exchange economy. This is itself a self-contained and complete economy, when it has no relations with other economies outside it. If we want to make a theoretical study of the processes of an exchange economy, we must, clearly, take a complete economy of this sort. To this as a whole we may then apply all that was said in the previous chapter about the complete or self-contained economy.

The mutual dependence of the various separate economies admits of degrees. Historical development has only gradually brought them together in a larger system. The various branches of production which were part of the old household were successively removed from it, and were entrusted to specialised and professional production. Contemporaneously with this, there has been a shrinkage of the individual household, in the sense that the labour-forces of it which were rendered superfluous by professional manufacture were withdrawn from it and drafted into the new trades. The result of this up to the present has been an individual economy consisting only of the family circle in the modern very restricted sense of the word, confining its work to the last stages of preparing things for the satisfaction of wants and obtaining the means to satisfy its wants by sharing in the general organised production. From this point of view the modern household may be called a "consumptive economy." The older type of household is now, as we said, only found in the country, and has itself increasingly specialised on agriculture in the professional sense, seeking the means to satisfy its needs by raising agricultural produce for sale. In agricultural districts the productive economy is still more or less identical with the consumptive economy, though at least on large estates there is a clear division between the consumptive economy and professional agriculture.

In an exchange economy conducted on these lines, production is mainly organised in independent trades separated from the private consumptive economies. Labour is for the greater part absorbed in these trades. Personal exertions are, however, also made directly for consumptive purposes in domestic service and by the free professions. Between the various productive trades, each of which effects only a partial production, there is such co-operation that the production is carried as far as the ultimate satisfaction of wants. From production thus organised there flows a steady stream of products and services to the consumers. The latter obtain the goods in exchange for their co-operation in the productive process, or for services which they render in virtue of their possessions. Organised production of this sort is called *social*, because it only becomes a self-contained and complete productive process by the organised co-operation of a society. No individual economy can maintain itself in such an organisation. Every man depends essentially or completely upon the social production for the satisfaction of his wants; but he has to pay for what he receives from it.

The tendency of the development was, therefore, to make the individual household more and more dependent upon the general economy, and thus steadily increase the importance of the latter. But this development, which has so thoroughly altered the aims of the individual household, has, nevertheless, left its economic interest essentially undisturbed. Its economic activity consists, as is the case with every economy, in so regulating consumption as to get the most complete possible satisfaction of wants with the available resources and in endeavouring to get all the resources it can for the purpose. In this respect the separate households pursue their own ends, and are therefore independent units of the larger general economy.

By the continual and organised exchange of services and products the wants of all the members of the community are met, more or less completely. The total economy may from this point of view be called a social economy, or, if we want to emphasise the fundamental importance of exchange in it, an *exchange economy*. The economy of a modern nation is essentially a social economy of this nature based upon the principle of exchange, or an exchange economy. When we want to indicate such an economy of a nation as a unit, we call it a "national economy."

This organisation of society on a basis of exchange necessarily presupposes a more or less extensive private ownership. At least one's own work, and what one gets for it, must be private property. It is of the very essence of exchange that it shall be a free act. As exchange is first and foremost an exchange of work for goods for consumption, it is one of the essentials of the exchange economy that there shall be a free choice of employment, of the extent and nature of one's work, and of the kind of consumption one prefers. The closer study of the significance and consequences of these two freedoms and the conditions in which they are to be exercised are, it is not too much to say, the nucleus of the theory of the exchange economy.

Freedom to choose one's kind of consumption is, from this point of view, the fundamental assumption of the following chapters of this Book; and the meaning of the liberty to choose one's work will be further considered in the Second Book, especially in the last chapter of it.

In the exchange economy production is, as we saw, almost entirely effected by a productive process based upon exchange. The residual productive activity, which the individual does for himself, is relatively so insignificant that we may ignore it here, and consider the productive activity only in so far as it falls within the processes of the exchange economy. This means that we regard production as complete at the point at which the products pass into the sphere of consumption. From this we get a corresponding limitation of the idea of real capital. In what follows we shall take real capital to be only those produced material goods which are found in the productive process, as thus restricted.

In regard to those durable goods which directly yield utilities for the satisfaction of wants, it may at times be doubtful whether they ought, or ought not, to be included amongst the goods in the productive process. In answering the question we have to notice whether the durable good yields its utilities with the co-operation of other factors or not. Our clothes, for instance, are durable goods, but they satisfy our wants directly, without the intervention of other productive forces. It is otherwise with tramways, for instance. They perform the service of meeting personal wants, but they require the co-operation of the power-station, the tramway employees, and so on. We, therefore, regard the tramways as goods belonging to the productive process, but not our clothing. It is not so easy to decide in the case of houses. It should, however, be clear that large tenements, in which the individual user rents a dwelling, must be regarded as belonging to production. The owner provides certain services. He gives the use of his house for a certain time for rent. It is only the use of the house that comes under the head of the direct satisfaction of wants. Between the construction of the house and this use of it there is a not inconsiderable activity, the essential side of which we shall have to leave for later consideration (§ 22); but it includes things which must be noticed here, such as supervision and maintenance, and possibly the lighting of the stairs and heat. Where the owner of a private house undertakes these things himself, they are, perhaps, best conceived as productive activities that lie outside the consumptive economy. We must, therefore, decide to include dwelling-houses generally amongst the durable goods in the productive process.

When there is exchange, it becomes necessary to consider how much of each of the goods to be exchanged shall be given. In other words, there must be a valuation of the goods. This valuation will obviously be much simplified if it becomes customary to reckon the value of all goods in terms of one particular good. We find, as a matter of fact, that this custom has generally spread contemporaneously with the spread of exchange. Wherever exchange has become so general that we may speak of an exchange economy, it is the custom to value all commodities in terms of a common good.

An article that has this function of common measure in the valuation of other goods is called *money*. The primary and fundamental function of money is, in fact, to serve as the basis of a *scale of reckoning*, on which the valuations of the exchangeable goods can be effected. Once the use of money has been established, all economic goods are valued on such a scale of reckoning—that is to say, in money. The exchange may still be direct, but the valuation of the amounts of goods to be exchanged for each other is effected by the mediation of money. However, a real exchange economy practically requires the development of an *indirect* exchange by the use of a generally recognised *medium of exchange*. The function of the medium of exchange and of the substratum of the scale of reckoning are, clearly, essentially different functions, and they may be discharged by different commodities. Both functions are, however, commonly described as monetary functions.

In the following theoretical considerations, relatively to the exchange economy in general, we shall regard money merely in its function as a common scale of reckoning in all economic valuations. This does not mean that the eventual actual use of the monetary article as a material means of exchange has no special economic significance. There is such a significance, but the study of it is part of the special theory of money, and it must be deferred to the Third Book. There we shall deal fully with the development of money, which we merely mention here, as well as with the function and nature of money.

When money is used as a scale of reckoning, the acts of exchange are replaced by acts of buying and selling. The seller hands over the good: the buyer undertakes to pay a certain sum of money for it. How he discharges this obligation will be shown in the theory of money. The amount of money that is paid for an article is called its *price*. The more developed the exchange economy is, the more frequent buying and selling become, and the larger is the group of the economic goods that are included in trade. As prices are consequently fixed for most economic goods, those who are concerned generally know approximately what price must be paid at a particular time for a particular article, and thus, as the economy develops, the general custom is gradually established of valuing economic goods in money. This custom in turn facilitates the exchange of goods. The valuation of goods in money is, therefore, an aspect of the exchange economy that increases in importance with its development. If we want to emphasise this aspect, we call the exchange economy a *monetary economy*.

The economic development is often represented as if an exchange economy based only on direct exchange, without the use of money, preceded the monetary economy, which is then represented as a different, independent, and higher development. This view has, as we shall see in the Third Book, no support in the historical facts. On the contrary, careful inquiry shows that the development of money has always kept pace with the development of the exchange economy; that the exchange of goods and the use of money have mutually helped each other at every stage; and that the development of a co-ordinated monetary system of the modern type almost coincides with the definitive establishment of the general exchange economy. There has never been such a thing as an exchange economy of any degree of advancement, a collective economy with an orderly exchange of products between independent economic units, without money. Hence the phrase " monetary economy " must not be taken to mean something different from the exchange economy, but must be used in the same sense as " exchange economy," though with special stress on the significance of money therein.

In economic science the idea that the monetary economy was preceded by a " pure exchange economy," as an earlier and simpler economic type, has been fatal. It is scarcely possible to doubt that this idea is responsible for the fact that economic theory has felt bound to deal with the procedure of an imaginary exchange economy without money and to make this study the basis of the entire theoretical structure. This practice has involved the science in immense difficulties, and thus led to innumerable controversies that were generally futile. As it was thought necessary to study the factors which regulate the exchange of goods apart from money, prices, or valuations of the goods in terms of money on the part of the members of the community, could not be made the subject of investigation, and therefore there could be no precise arithmetical expression of the valuation of the goods. The very vague and elastic idea of "value" was used instead. Value was supposed to indicate the relative economic importance of the articles, but, precisely because there was no arithmetical standard of this importance, the idea of value was bound to be obscure, and could never have the precision of an arithmetically expressed idea of magnitude. It is true that recently there has been an attempt to get out of the difficulty by trying to measure the economic importance of goods by the intensity of the feeling of their necessity. Some would construct the whole of economic theory on such fictions, and would have it that this "subjective theory of value" is a great advance in economic science. But the complete lack of arithmetical foundation, though the theory was often put forward in arithmetical forms and formulæ, prevented it from having the intrinsic solidity which we require in a scientific theory; and it showed at the same time what the essential defect of the theory was. It was the rejection of the standard of valuation which is actually used in economic practice, the exclusion of money from the whole investigation of the exchange economy. Human judgments of value are of their very nature relative, and in practice men have always found it necessary to reduce them to a common measure—money. In practical economic life, as we shall see more clearly later, the emotional intensity of the demand is only considered in so far as it enters into money valuations. This ought to fix the limits of economic science; it can consider subjective economic elements only as they are manifested in monetary valuations.

It follows from this that a special theory of value is at least quite unnecessary in economic science. Every attempt to frame such a theory without a common measure to express estimates of value is bound to encounter great difficulties. On the other hand, as soon as such a common measure is introduced, we are substantially dealing with money. Values are then replaced by prices, estimates of value by valuations in money. We have a theory of prices instead of a theory of value. From this situation we must conclude that the whole of this theory of value ought to be excluded from economic science. The theoretical exposition of the exchange economy must include money from the start, and must therefore be essentially a theory of the fixing of prices.

It will be found that this makes matters very much simpler. We shall be able to avoid a great many controversies on which a good deal of futile trouble has been expended. We shall find ourselves in a position to emancipate the science from discussions which only too often have degraded it into the worst sort of scholasticism. This radical purification is absolutely necessary if we want to direct our scientific work immediately to the real and assuredly very important tasks of economic theory.

The attempt to lay the foundations of economic theory without introducing the idea of money was influenced by the pedagogical idea that so difficult a theme as the nature of money should be deferred as long as possible, not treated at once in connection with the general foundations. We will take this idea into account here. Money shall, as we said, only be introduced for the moment as a scale of reckoning. That economic theory sought to avoid this way is partly due to the fact that the relativity and mutability of every money scale were noticed, and it was attempted to make economic valuations the groundwork of the theoretical exposition of the economic life in a form devoid of this relativity and mutability. But it was quite fruitless. The utmost that could be done was to reduce economic valuations to an ideally conceived scale of money. This however, clearly amounts to merely postponing to a later stage the question how the money-scale is stabilised in actual life. That is what we intend to do here. We merely postulate a scale of reckoning on which all valuations are effected. But in order to get some sort of concrete idea of the monetary economy at this stage, we may conceive the reckoning in money merely as bookkeeping, and payments in money as entries in books. For the moment we must ignore the existence of a material money. The question how the scale of reckoning itself is settled—how prices are fixed in absolute figures—must be left open, and reserved for the special theory of money.

This procedure is not an artificial device, but is really based upon the nature of economic science. In actual economic life all the various phenomena are so closely interwoven that it is impossible to isolate one of them. Economic science must be guided by this fact. It must, of course, consider the various aspects of the economy in successive chapters, but it must not claim that such separate inquiry is complete in itself. A division of economic science in this sense is impossible. On the contrary, from the very nature of the case each separate inquiry leaves many things unexplained, and the explanation of them must be sought in another chapter. One cannot have a comprehensive knowledge of any special economic phenomenon until one knows the science as a whole. From this we get an important hint for the study of any scientific exposition of the economic life: the pupil must read such a work twice. It is only when the first reading has given him some knowledge of the whole that he is in a position to understand the several parts completely.

In turning, therefore, to the study of the exchange economy, we will from the start regard it as a monetary economy. The first thing to do is to describe the facts and processes which we found in the first chapter to be characteristic of the economy in general in the form which they assume in the monetary economy. This shall be the task of the next section. Then we will go on to study the particular phenomena of a monetary economy.

§ 8. CAPITAL AND INCOME IN THE MONETARY ECONOMY.

When the custom is established of valuing economic goods in terms of money, the things which we have called real capital are regarded mainly from the point of view of the sum of money for which they can be bought or sold. They are conceived as the representatives at the moment of this sum of money, and the abstract sum of money itself seems to business people generally the essential thing. The popular use of words calls this sum of money simply "capital." In this abstract sense, therefore, capital is a sum of money which is for the time being incorporated in a certain concrete real capital, but which may at any time, by selling this and buying something else, assume any other concrete form we choose.

However, this conception of capital is enlarged for obvious reasons, and in two different ways. Clearly a piece of land may be bought for the sum of money just as well as a piece of concrete capital. It then, from the point of view of the monetary economy, from which capital is now envisaged, makes no difference whether the "capital" happens to be represented by real capital or land. On this view the "capital" is substantially the same in either case. In the next place, the sum of money need not be used immediately for the purchase of a material object. It may be lent, or put at the disposal of other individuals in some other way on certain conditions: in the form, for instance, of a loan, shares in a company, and so on. The "capital," as generally understood, is still substantially unchanged. The owner has still the same capital, only it is now embodied for a time in a claim, a share, or something of that sort. One consequence of this extension of the idea of capital is that the liabilities which are correlative with these claims must be regarded as negative capital, and must be taken into account in estimating the total capital of an individual economy. From which it follows that the total capital may be negative: when, that is to say, the liabilities, reckoned in money, are greater than the positive capital. It further follows that, when the total capital of a self-contained exchange economy is estimated, all these claims and liabilities must be set against each other and omitted from the total. Hence the total capital is represented entirely by the real capital and land—in other words, by the material goods in the process of production.

Moreover, capital may be used for the purchase of certain rights—business rights, patent rights, etc.—without making any material difference to it. These rights differ from those already mentioned in so far as they represent a positive outcome of human efforts; they do not mean merely, as claims and similar rights do, that other people have undertaken corresponding liabilities. Hence in estimating the total capital of a self-contained exchange economy they will not disappear, but form part of it. In order not to complicate the following discussion too much, we will ignore these rights. We may then lay down the principle once more that the total capital of a self-contained economy is represented entirely by its real capital and land.

The ownership of goods and rights in a monetary economy normally ensures a certain return to the owner. This is precisely the one point of view from which capital is regarded in the monetary economy. From this point of view it is usual to call the capital "remunerative capital." The word "wealth" has generally a rather wider meaning in the phraseology current in a monetary economy. It means, besides "capital," a sum of money, including, at least in part, the money-value of material goods, such as furniture and works of art, that have already passed to the consumer, and must then, according to our definition, be counted as real wealth, but not real capital. From this point of view, therefore, capital may be defined as profit-bearing wealth.

Capital in this monetary sense—in the sense of a sum of money that is for a time incorporated in some material good or right—will in the following pages be called simply "capital" in accordance with general usage. Capital in this sense might, as distinct from real capital, be called "formal" or "abstract capital." But such terminology would prove rather difficult if one were to press it to its logical conclusions, and it has the disadvantage of differing unnecessarily from ordinary speech. There can be no question that our common language, in harmony with the monetary economy, really does use the word capital in this sense of an abstract sum of value expressed in money-terms, no matter in what objects it may be incorporated. In this sense the word is used, for instance, when we say: "This railway requires a capital of half a million," or "He has invested his whole capital in foreign bonds," or "A capital of ten thousand pounds was lost in this unfortunate business." The word capital has the same meaning in book-keeping: for instance, in the balance sheet of a limited company, where the company's capital is entered amongst its liabilities, and covered by its assets, but is regarded as a quantity independent of the concrete and perhaps variable items of the assets. Ordinary speech is fairly definite in this respect, and we may therefore use the simple word capital in the sense we have described without any risk of misunderstanding: on condition, of course, that the scientifically defined and, in science, important idea of real capital is always expressed as such.

Real capital is an absolute category in every economic order, and is therefore to be found in the older as well as the modern economies. But capital in the sense we have given may justly be described as a special phenomenon of the monetary economy. Hence when it is said, for instance, in historical accounts of economic evolution that at the close of the Middle Ages capital began to appear as a new factor of the economic life, accumulated in the great trading towns, and gave the subsequent economic and political development its peculiar character, this must merely be taken to mean that the monetary economy at that time was more highly developed in certain places; that in these places there was a regular market, with a fairly brisk exchange of goods which were important constituents of the real capital; that, therefore, these goods flowed in a steady stream through the places in question, and were bought and sold for money there; and that in consequence of this the merchants of those places were always in a position to dispose comparatively rapidly of their real capital in the form of money for any purpose they chose, and so secured an economic and political power which had a decisive influence on the subsequent development. Thus the "rise of capital" must by no means be conceived as a creation of a new category of concrete goods. It is substantially a question here of a modification, a considerable intensification, of the economic life, whereby goods which in their technical nature had existed long before entered in larger quantities into the monetary economy; though, of course, the simultaneous great development of production must not be overlooked.

The business man who in such circumstances is able to dispose of his capital at any time in monetary form, and embody it meantime in anything he pleases, is naturally apt to think that the sum of value expressed by the money is the permanent, the essential, thing in the idea of capital, and that the ever-changing concrete phenomenal forms of the capital are something accidental and subsidiary. On this view the capital maintains its identity even if the concrete goods which represent it are sold and exchanged for others. Hence such common expressions as that capital is "realised" or "converted" into money. The more easily and frequently this process of conversion takes place, the more "fluid" and "mobile" the capital seems to be. "Circulating capital," from this point of view, means capital in so far as it frequently undergoes this conversion; it is "fixed capital" when it is so invested that it cannot be realised in money for a long time. But the distinction is very relative, and it by no means coincides with the distinction we drew between circulating and fixed real capital. It is true that circulating real capital has a special position in the advanced exchange economy in so far as, in the normal course of production, it passes from one undertaking to another, until it is used up in production or converted into fixed real capital, or, in fine, passes into the sphere of consumption as a finished product. In the organisation of production in an exchange economy a frequent conversion of circulating real capital is in the very nature of things. But it is not so with fixed real capital. In the normal course of things it remains in the enterprise in which it is used, and often it cannot be transferred to some other branch of production, or at least not without great difficulty and losses. Hence from the point of view of a monetary economy fixed real capital represents a more or less bound-up capital. However, the system of a monetary economy has to a great extent got over the difficulty of this immobilisation of the capital of the individual, as the securities which represent the capital can be dealt with on the Exchange, and can therefore easily be sold at any time. Here we have, so to say, an artificial mobilisation of capital which gives new mobility to the capital that is bound up in fixed real capital, land, or long-period or perpetual loans. This brings out very clearly the marked relativity of the distinction in a monetary economy between circulating and fixed capital.

The economic endeavour to secure the means of meeting wants takes the form in an advanced monetary economy chiefly of an endeavour to get money. The sum of money which the individual economy acquires during a certain period is its proper "income." Of this sum it may dispose as it wishes. The various material goods and services which constitute the real income of the economy take a secondary place as special uses of the sum of money, which is regarded as the single and essential constituent of the income. This is carried so far that even the real income that is directly produced and consumed in a farmer's economy is estimated in money, and only in this form is it regarded as income comparable with the farmer's money income.

In defining the income of the individual economy in monetary terms, the following must be borne in mind. The various money-returns that come into the economy cannot in their entirety be regarded as income, for we must make a deduction of such of these returns as are not really at the disposal of the economy, but must be paid out as business-expenses, interest, etc.; also those returns which represent only capital that was previously at the disposal of the economy, but during the income-period was "realised" by, for instance, the selling of real capital or cashing a monetary claim. In the income of the economy its money-returns are, clearly, only to be included to the extent to which they, when not used for purposes of consumption, augment the capital of the economy. A money income is only used for consumption, however, when it serves to pay for a real income. Moreover, all real income that is produced in the economy, or which accrues to the economy without a corresponding money payment, must be reckoned as income with its value expressed in money-terms in the same way and under the same conditions as actual money-returns.

Hence in the monetary sense the *income* of an economy may be defined as the total value, expressed in money, of those goods which were used for the consumption of the economy during a certain period, with the addition of the augmentation of the capital of the economy during the same period or with the subtraction of any diminution of capital. As the increase or diminution of capital during the period is equal to the difference between the amount of the capital at the end and the beginning of the period, the definition may also be formulated thus: The income of an economy within a given period is equal to the value, expressed in money, of the real consumption, adding the capital at the end and subtracting the capital at the beginning. This definition is so broad that it even includes the case in which the diminution of capital is greater than the value of the consumption, and therefore the income is "negative." It also extends to cases in which the capital of the economy is negative: for instance, cases in which the income is partly used to liquidate debts.

If we now sum up all the incomes thus defined in the entire exchange economy—which we are always taking to be self-contained—and call this sum the *total income* of the exchange economy, this income is clearly equal to the value, expressed in money, of the real income consumed by the economy during the period, adding the final capital and deducting the initial capital; therefore equal also to the value of the real consumption, with the addition of the increase of capital during the period (or deduction of decrease). And as the capital of the economy is equal to the total value of its real capital and land, it follows that the income of the total economy is equal to the value of the real consumption, with the addition of the amount by which the total value of the real capital and the land has at the end of the period exceeded their value at the beginning of the period. From this we now get the important principle that *the income of the total economy just suffices to pay for the total real consumption and the surplus value of the real capital and the land.*

If we take the simple case in which all unit-prices have remained the same throughout the period, it is clear that this surplus value is equal to the value of the increase of real capital during the period. But according to our definition the sum of the real consumption and the increase of real capital is the real income. On the above assumption, therefore, we may formulate our principle thus—that *the income of the total economy, expressed in money, in any given period just suffices to purchase the total real income.* Now the real income represents the result of production during the income-period. Hence *the money income purchases this result of production.** This principle applies also to the case in which the expected surplus is turned into a deficit; in other words, when the final capital is smaller than the initial capital, and the total economy has partly lived on its capital. In this case the real income is clearly equal to the real consumption, deducting the decrease of the real capital. It is only the remainder that is to be regarded as the result of production during the income-period. The principle is, therefore, universally valid when unit-prices are taken as constant.

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* In the statement of the principle we must bear in mind that an increase of the material money is included in both the real income (as an increase of real capital—see note p. 39), and in the monetary income. Hence part of the monetary income must be used to take over the new material money.

In dealing with questions concerning the income of the total economy it is necessary to assume that prices remain constant during the income-period because otherwise the concrete significance of the total income could not easily be realised. At the most we might broaden the assumption so far as to suppose that prices remain constant " on the average." We must, however, understand this to mean that the total value of the real capital and the land is not influenced by the changes of prices, and that any increase of this value during the income-period is entirely due to production. If we suppose this, however, our principle, that there is a necessary agreement between the money income and the money value of the production, is still valid.

There has been a good deal of dispute about this principle, and it was, therefore, important to formulate it clearly and prove it rigorously. But we must admit that the result is to some extent of a merely formal character. We must, at all events, not read into it the meaning that every product must be saleable. A product that is created during the income-period, but at the close of the period must be kept in store by the producer, must, according to our definition, be assigned, at some value or other, to the capital, and consequently to the income, during the period, of the producer, and must, to the same amount, be added to the value of the real production of the period. It is quite obvious that unsaleable articles may be produced, and that a complete return for the products can only be expected when production is directed in entire harmony with the wishes of purchasers. Thus it can only be proved that saving as such does not involve any restriction of the total market for production.

The income of the individual economy is divided, as we saw, into two parts. One part serves for purchasing goods for consumption; the other for purchasing real capital or land, or for acquiring claims or other rights representing capital—in a word, for the formation of capital. We say that the first part of the income is "consumed," the second part "saved." Vague ideas about the precise meaning of this are not uncommon. Amongst other things it is said that there is a certain danger in saving: that if saving were general, if people refrained to any great extent from consuming their income, it would be impossible for producers to find purchasers of their products, and there would be a glut on the market—and that this glut would certainly occur if general saving were to last a long time. We need only point out, in reply to these ideas, that in the *total economy*, if we take an income-period with steady prices, both the saved and the consumed income are used entirely for the purchase of the results of production. The only difference is that the saved income purchases goods which represent real capital, whereas the consumed income purchases goods for consumption. The only effect of this difference is to cause a distribution of the total production in a certain ratio between the two different categories of articles. Hence saving as such cannot restrict the market for production. It would be just as wrong to say that in a saving community of this kind production is diverted to too great an extent to the creation of capital goods. Production has, in any case, to follow the wishes of purchasers. Even the idea that general saving could not be continued indefinitely is wrong. Saving, in the sense in which we take the word here—a withdrawal of money-income from consumption—is, from the concrete point of view, a restriction of the satisfaction of wants in order to facilitate the formation of capital in the concrete sense. But we have proved in the preceding chapter (§ 6) that a continuous formation of capital is not merely possible, but is actually an indispensable condition of the progressive economy. The result would be the same even if there were a general advance of prices during the income-period. For this rise of prices would cause a rise in the total value of the real capital and land, and would involve an addition to the total income corresponding to this "increase in value."

The meaning of the continuous formation of capital is seen most clearly in the evenly progressive economy. This may now be defined in more general terms than in the preceding chapter. In the monetary economy economic progress, assuming unaltered prices, can be measured by the increase of the abstract total capital, and may be regarded as uniform when this capital increases annually by a definite and invariable percentage. Let us call this capital C, and suppose that C increases annually by p per cent., p being constant. This increase of capital is, as we have seen, only possible on condition that there is a certain amount of saving. Let us call the annual income I, and suppose that annually the proportion $^1/s$—in absolute amount I/s—is saved. We will call this quotient which arithmetically expresses the community's thrift, the "degree of saving." Clearly $\frac{I}{s} = \frac{p}{100} C$, and consequently $I = \frac{sp}{100} C$. If we further suppose that the degree of saving $^1/s$, or the relative saving of the community, is constant, which clearly harmonises best with our assumption of an even development, we find that the total income is in an invariable ratio to the total capital. From this we get the important principle that in the evenly progressive economy *the income increases in the same percentage as the capital.* This principle is approximately correct for every economy if we take long periods into consideration. It is only during periods of transition that there will be any material difference in the rate of increase of capital and income. This result is important because it affords us standing ground for a critical examination of statistical data as to the increase of income and capital. We find also that it is possible to estimate the income of an evenly progressive exchange economy by multiplying the capital by the product of the percentage of increase and the reciprocal value of the degree of saving. This should be borne in mind in statistical calculations and estimates.

If we assume, for instance, that the percentage of progress is equal to 3, and that, therefore, the capital (C) increases annually by 0·03 C, and further suppose that one-fifth of the annual income is saved, the income is, according to what we have said, equal to 15 per cent. of the capital. These figures must be about right in the case of Sweden, where the national wealth and national income in 1908 were estimated at about 14,000,000,000 and 2,100,000,000 kronor. An official commission of national defence, in fact, estimated the annual percentage of increase of the national wealth during the period 1885–1908 at 3·18 per cent. Such figures can, of course, never be precise, but the figure given must be a fairly correct estimate.

For the countries of Western Europe we may assume for modern times (before the War) that the normal advance was about 3 per cent. Although the figure is only approximate, it is as well to have some standing ground for comparisons, and to be reminded that on the whole, and for long periods, the increase of both capital and income must be indicated by the same figure.*

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* During the period 1850–1907 the world's pig-iron output rose annually about 4·2 per cent. (Sundbärg, *Aperçus Statistiques*, xi.). The development of the iron output may, as we shall see in the Fourth Book, be regarded as typical of the whole industrial development. If we assume that the production of foodstuffs rose by 1·2 per cent. annually, and further suppose that these necessaries of life represent one-third of the national income, and that the remaining two-thirds have increased with the industrial percentage of advance, we get an average percentage of progress of 3·2 per cent. These estimates are, of course, rather uncertain. But it seems better to have an approximate idea than none of these very important quantitative relations.

CHAPTER III

THE ECONOMIC PRINCIPLE IN THE EXCHANGE ECONOMY

§ 9. NATURE OF THE PROBLEM.

THE essential characteristic of the exchange economy is the existence of a mass of individual households within the total economy which by virtue of their productive work and their possessions during a certain period have the control of certain sums of money, and are free to use these sums as they please in purchasing goods produced in the collective economy for the immediate satisfaction of their wants. As, however, these goods are only to be had in limited quantities, it is clear that the wants of the individual households must be restricted; and, naturally, in virtue of the general economic principle the more important wants will be preferred to the less important. And as the available means of production, especially labour, may within very wide limits be applied to different branches of production, and therefore the supply of articles depends upon the control of social production, the general economic principle further requires that the means of production shall be used to the best possible advantage. This can only mean that they shall be used in those branches of production in which they meet the more important wants. Thus the application of the economic principle in the exchange economy depends always upon the question which are the "more important" wants. Clearly there must be in the economy as a whole such restriction of wants that no less important want shall be met in preference to a more important. Hence the central problem of the exchange economy is the classification of wants.

In the self-contained individual household the problem is simply solved by the will of the head of the household. By assigning different degrees of importance to different wants he is in a position to draw a certain line as regards the satisfaction of wants and give a certain direction to production. In the exchange economy there is no such single will. It is, on the contrary, one of the features of the exchange economy that each household shall, within its means, choose its own way of satisfying its wants. At the same time the wants of all of the individual economies must be arranged according to their relative importance, at least to the extent that a line must be drawn between the wants that are to be met and the others. The entire production must be regulated in this sense. How this is actually done, and what sort of organisation the exchange economy requires for the purpose, are questions that we have to answer in the present chapter.

Economic science has in the first place to describe the economic facts, as they are found in real life, and explain them and their inner connections. The actual economic life, however, presents such a mass of details that a general view of it can only be obtained by taking the normal and typical, and ignoring details and variations of subsidiary importance. Hence here we have to show how the economic principle is realised in the exchange economy on broad and essential lines. Economic science has, however, another task: that of examining the institutions of the actual economic life in respect of their degree of necessity. We shall first consider an exchange economy in regard to which we assume only that it meets the requirements of the economic principle—the uniform restriction of wants and the direction of production. It is always an advantage to study the exchange economy first on these general lines. It brings out the essential features of the actual economic processes and puts them in the clearest possible light. We must especially avoid making in advance any special assumptions as to the organisation of the economy which would not have an approximate general validity for the actual economic life, and are not essentially important for the realisation of the economic principle.

Our problem may usefully be treated in two different stages. First we may devote our attention to the question how a uniform restriction of wants is to be secured in the exchange economy and what is the nature of this uniformity. We must then inquire how the available means of production are distributed amongst the various branches of production, and how a production in accord with the demand is secured. These are, of course, not two separate problems, but two aspects of one and the same problem—namely, the most economical use of the productive forces in view of the actual wants. If we at first confine ourselves to the question how the wants are regulated, it means that we are studying the regulation of the demand first on the simplifying assumption that the production is invariable: that is to say, on the assumption that the amounts of finished goods available in any given period for the satisfaction of wants are fixed in advance. We will afterwards drop this assumption, and we shall have before us the whole problem of the realisation of the economic principle in the exchange economy. That is the order in which we will now consider the problem.

§ 10. The Restriction of Wants. The Case of Collective Wants.

With the money which the individual households are prepared to give for the satisfaction of their wants they make certain demands upon the supply of goods in the collective economy. As these goods are always limited in quantity, the wants must be restricted somewhere: that is to say, certain wants cannot be satisfied. This is done by fixing prices. In view of the limitation of the amount of money that is available for use, the need to pay certain prices for the various goods means a restriction of the demands which are put forward for different goods by the several households. The fixing of prices has, therefore, the socio-economic aim of restricting the demand for goods to such an extent that it can be met with the available means.

One finds, however, on looking more closely into this task that articles behave very differently in respect of the possibility of restricting the demand for them by fixing prices. Frequently the demands upon the stock of goods can be reduced by the exclusion of certain individual demands. This is the case, for instance, with all consumable goods that serve for the immediate satisfaction of wants, and generally, as is easily seen, for all goods that are demanded in an exclusive manner by the individual consumer. When, for instance, the use of potatoes is reduced in the households, the demand upon the general community's supply of potatoes is correspondingly reduced. But there are large classes of commodities to which this does not apply.

There are, first of all, the durable goods which can be used by a number of persons simultaneously. If, for instance, certain individuals are forbidden to use a bridge, the demand upon the community's store of goods is not in the least reduced: at least, not if we suppose that the wearing of the bridge by their use of it is so slight as to be negligible. If the demand for a bridge is to be met, the bridge must be built. Once it exists, it may, within certain limits, be used to any extent within a given period of time. Restricting the number of people who use it is of no consequence to the remaining supply of goods; it sets no articles or productive forces free for other uses. There can in this case be no real restriction of the demands upon the stock of goods except at the time when the question arises whether, and how, a new bridge is to be built. The price which must be paid for a new bridge, and the price of the annual use of the new bridge, which depends upon the first, but is also influenced by other factors, puts a certain limit upon the demand. Those who are interested have to find the money somewhere. This may be done by charging for each use of the bridge or by contributions, and these will generally have to be made compulsorily by those who are interested. The first method has the practical disadvantage of being apt to keep the use below what is possible, and thus restricting the satisfaction of wants without a corresponding restriction of the demand upon the stock of goods; moreover, it often means a disproportionate cost of levying the toll. On that account the ancient tolls for bridges and highways have been generally abandoned in modern times, and the practice is to cover the cost by raising compulsory contributions in some form or other.

What we find in this particular instance is generally applicable to those durable goods which, within certain limits, can be used any number of times, and also, in some measure, to certain personal services (orchestral music in the open air, for instance) which, if they are rendered at all, may just as well be enjoyed by a large number of people.

In the cases we have considered so far the raising of a contribution as a condition of the use of the good is possible, though, perhaps, not convenient. There is, however, an important group of cases in which it is not possible. These are services which are of use to all the individuals of a certain class without any action on their part. In dealing with the satisfaction of wants we must distinguish between *active and passive*. In the former case the satisfaction of wants involves some activity on the part of the persons concerned. This is the case, for instance, when a man eats, visits a theatre, or crosses a bridge. In such cases it is possible to fix a certain price for the enjoyment, and exclude those who will not pay the price. But in the second case the satisfaction of wants involves no active exertion on the part of the individual; sometimes not even an outward expression of will. The satisfaction is purely passive. To take a quite simple and clear example, this is the case when a country is protected by the use of certain measures against a cholera epidemic. Once the protective measures have been adopted, all the inhabitants of the country profit by them, whether they wish or no, even when they have no suspicion of the fact. In such circumstances it is not possible to fix a certain price for the use of the service in question. No individual can be excluded.

The wants which are satisfied while the individual remains purely passive must obviously be attended to collectively. They are in their very nature social. We will call them pure or absolute *collective wants*, and the goods which serve for the direct satisfaction of them *collective goods*. To meet these wants it is generally necessary to exact compulsory contributions from those interested. The restriction of collective wants is effected by the price which must be paid by the community for the satisfaction of them. The officials who act for the community in the matter must carefully consider how much importance must be attached to the collective demand, and must compare this with the importance of the individual needs of the various households.

In the cases given above, where it is possible to charge each individual for the satisfaction of his wants, but this does not regulate the demands upon the stock of goods, and where, therefore, the community undertakes to pay the total price, we may speak in a relative sense of collective wants and collective goods. The antithesis to these collective wants are the individual wants, the satisfaction of which presupposes a certain individual claim to goods on the part of the single person; and this is restricted by fixing prices that the individual must pay for the goods.

In modern civilised society the collective wants form a very extensive group. The instance given above—protection against infectious diseases—may serve as a type of a whole series of collective wants. We may instance also, amongst other things, a nation's need of personal and legal security at home and of protection against enemies abroad. To satisfy these large collective needs a great economic authoritative organisation, the State, is required. Naturally, this is not supposed to be an exhaustive description of the nature of a State. From the point of view of economic science, however, the State is thus to be conceived as a great compulsory organisation for meeting the general collective needs of the people, and the essential function of the State is to be seen in the economic activity which is required for the purpose. It is only from this point of view that we see clearly the necessity of the State, on which so much obscure phraseology has been expended, on the strength of purely economic considerations. This necessity, based upon the character of the purely collective needs, ought to be the starting-point of all financial science. It is only thus that the science acquires a solid nucleus, its essential sphere is laid down from the start with rigorous logic, and—what is very important—it is organically connected with the whole of economic science.

There are also collective needs of a more local character, and these must be met by smaller local organisations with compulsory powers. Constructing dikes against the sea is a typical instance. When dikes of sufficient strength and extent have been raised, they serve to protect a certain area. All landowners in this area profit by the construction; and they do so passively, so that it is not possible to make a charge as a condition of being benefited. Here again, therefore, we have a purely collective need. To meet it requires a compulsory organisation of the relevant landowners—a local organisation. The need in question is, as a matter of fact, one of those collective needs which led to the formation of the earliest communal organisations. Another example is the need to light the streets. When the streets are illumined, the advantage is used by everybody in the street without the need of any special activity on their part, and it is impossible to prevent people who have a right to use the street from enjoying the light, or to make a charge in each case for the privilege. In these circumstances the lighting of the streets is a collective need, and compulsory contributions to it must be raised. These examples ought to suffice to illustrate the economic character and necessity of the municipality as a local authoritative organisation for the satisfaction of local collective needs.

The compulsory contributions which are raised by these organisations are called taxes, in the broadest sense of the word. Financial policy has, however, tried as far as possible to secure that to meet the collective wants, which concern only limited bodies of people, the burden shall be restricted to those people. Compulsory contributions restricted in this way are known as "special assessments," "rates," and distinguished from the general taxes. As we have already said, the bodies who have to fix the expenditure of compulsory organisations must carefully consider the importance of the collective wants as compared with those of individual households and restrict the burden of taxation accordingly.

It is a common occurrence for the machinery for meeting collective wants to extend its activity to wants that can only be called collective in a relative sense, or are in themselves purely individual, though the satisfaction of them has a certain collective interest. We have already given instances of collective wants of the former character in the construction of bridges and roads, which is now undertaken by local authorities or by the State as a collective task to be met out of taxes. We have an instance of the collective satisfaction of wants of the second character in public instruction, when the education is given free or under cost price, as is usually the case. It is true that the individual primarily has an interest in being properly trained for his future work, and so the need of education is primarily an individual need, the satisfaction of which may be made dependent upon the willingness to pay of the persons interested or their families. However, the community as a whole has a very substantial interest in seeing that the general education of the people is carried to the highest possible stage, since—to consider the matter solely from the economic point of view—the results of social production, on which every person is absolutely dependent in an advanced exchange economy, are greatly increased by education. From this point of view education may be regarded as a collective interest. Modern social politics has in this way given a certain collective character to a number of wants. We need only think of the numerous measures of social hygiene (free or cheap baths, etc.). Every such extension of the collective satisfaction of wants clearly means an encroachment of the public authorities upon the sphere of the household. Certain individual needs are described as particularly important, and the households taken together are compelled to use their means more generously in meeting these wants than they would do if they were left to themselves. In this way the freedom of the households to control their own satisfaction of their wants is restricted.

The State and the municipality are not the only compulsory organisations in the modern social economy for meeting collective wants. There are other organisations, though they have no public authorisation, for certain special economic purposes. Such are the Trade Unions of the workers and the unions of employers. The interest of the workers in the rise of wages under modern industrial conditions is essentially collective. When wages have been raised, the rise usually benefits all the workers in a trade whether or no they belong to the union, even those who have not contributed to the cost of the struggle. The only means of making all who benefit contribute to the cost is, as in the case of every collective need, a compulsory organisation. It is the same with the employers. This observation may help to elucidate the nature of the satisfaction of collective wants by means of compulsory organisations.

The representatives of these organisations take their place in the economy by the side of the individual households as consumers and make similar demands upon the stock of goods. If, therefore, we regard the collective economies as special types of individual economies (households), we simplify the problem of the limitation of wants in the exchange economy. The demands upon the stock of goods then become a single quantity, and our next step is to see how it is possible so to reduce these demands by fixing prices that they can be met with the available supply of goods. We turn, therefore, to this question.

§ 11. THE RESTRICTION OF WANTS. GENERAL CASE.

It is possible to conceive a society in which the collective whole authoritatively regulates the satisfaction of all the wants of all the members: in which not only the collective, but also individual, wants are satisfied by an authoritative organisation, and no room is left for the individual household to use things as it pleases. This is the *communistic* society. In the actual economic order the family is, in a sense, a communistic economy. We must, however, reserve the name communistic society or economic order for a larger society which, in the main at least, is a self-contained economy with a single control of the entire consumption. We have examples of this in the communistic colonies, generally of a religious character, which have been founded from time to time, and in some cases lasted quite a long time, though as a rule they broke up very speedily.

The opposite of this communistic order is the exchange economy which, as was shown in § 7, is characterised by the existence of independent private consumptive economies, with free choice in regard to the satisfaction of their wants within the means at their disposal. There can be no doubt that civilised men greatly appreciate this free choice on the part of the individual or the family. It is true that sooner or later there is an encroachment of the collective economy upon the sphere of the individual, as we said, in the sense that certain utilities (such as baths or libraries) are put at the disposal of certain classes free or at a reduced price. These, however, are exceptional cases, and must not be regarded as a material restriction of free individual consumption. The free choice of consumption on the part of the household must certainly be regarded as one of the most important elements of our economic order; for this is, in its innermost nature, the antithesis of communism.

We have now to see how the problem of restricting the satisfaction of wants is solved in the exchange economy. In this section we deal first with the simplified theoretical case in which the goods which serve for the direct satisfaction of wants are given in certain quantities; or, rather, since the supply of the community with goods is effected by a flowing stream, not by a given stock, the goods are available in definite quantities within a certain period of time. Each of these quantities we will call the *supply* of the article in question. We assume in this section that the supply of each of the commodities that directly satisfies needs is a given quantity of the problem. We thus leave aside for the time all the difficult questions that are connected with the regulation of the supply of goods. With these we will deal in later sections. We further make the simplifying assumption that the sum of money which each household pays for the satisfaction of its wants in the period in question is taken for granted.

In our actual economic order the demands of individuals upon the supply of goods are regulated by putting prices upon all goods; and these must be paid before the goods can be had. As the money resources of the individuals are limited, the fixing of prices compels individuals to restrict their consumption in one or other direction so that the sum of money they can expend will give as uniform a satisfaction of their wants as possible. If the prices are put high enough, therefore, the demands of consumers can be so far restricted in every direction that they can be met out of the existing supplies of the various goods destined for consumption. This restriction of the demands of consumers is, in the case considered in this section, the work of the settlement of prices. The need for this lies in the fact that the competition of consumers for the goods of the exchange economy can only be regulated by a suitable fixing of prices. The method here described of restricting the demands of consumers is clearly that which leaves as much room as possible for free choice in consumption on the part of individuals.

As the restriction of consumption must be all the more rigorous in proportion to the scarcity of goods relatively to the demands of consumers, and therefore prices are substantially determined by this scarcity, we see that the described purpose of the fixing of prices is an expression of the principle of scarcity which we gave in the first section. Hence *in the exchange economy the principle of scarcity means the need to bring consumption, by the pressure of prices, into harmony with a relatively scanty supply of goods.* In this principle, which brings out the socio-economic necessity of prices, we have also, as we shall now see, the general and essential basis for the determination of prices. The principle of scarcity is, in fact, of fundamental importance to the theory of prices, and therefore to the whole of economic theory.

If an article exists in one single specimen, the price must, of course, be put so high that all buyers except one will be excluded. When there are many articles of the same category, but somewhat different in quality (villas in a residential suburb, for instance), the prices must again be so fixed that there will be one purchaser for each house.

In regard to those articles which are produced in such uniform masses that one specimen is as good as another, the problem of prices is somewhat different. As a rule, a single price is put upon each such article, chiefly because it is difficult, if not impossible, to make a distinction between the various purchasers and make some pay more than others for the articles. There are, however, exceptions to this rule, when vendors try, as far as possible, to get better prices from the wealthier customers. In medical practice, for instance, it is the custom to make rich patients pay more. Sometimes, in fact, there is a graduated scale of charges according to the economic condition of the patients. There are even attempts at graduated prices in regard to completely uniform articles produced in large quantities. A certain tablet of soap, for instance, is priced at sixpence, and is sold at that price in the shops of West London; but it can be bought in other parts of London for less, and the price varies. It is well known that clothes have similar variations of prices; but in this case it may be objected that differences of quality, cut, etc., justify the differences in price. On the other hand, we sometimes find that the poorest people have to pay the highest prices. This, however, is mainly due to the greater relative expenses and losses of small retail businesses.

As a rule a differentiation of prices for one and the same article is too difficult, as, naturally, all purchasers want to buy the article at the lowest price. The rule is, therefore, that the same price is put upon any article of homogeneous quality in one and the same place and under the same conditions of trade. The moment the article shows any variations, of course, there can be differences in the price. To what extent these differences are based upon objective conditions, or really justify differences in the price of one particular article, we cannot tell until we come to consider production. We reserve these questions for the moment, and take the case in which homogeneous commodities or services are sold at identical prices.

When the prices of all goods are given, we may assume that all the factors which influence the individual in regulating his consumption are fixed; the quantity of each article that the individual or household will buy is settled. We call this the "demand" of the individual for the good in question. The sum of all the quantities of a particular good demanded by individuals is the "total demand" for that good in the exchange economy in question. This total demand must, if there is to be equilibrium, cover the total supply within any given period, because, in virtue of the principle of scarcity, it is the object of prices so to restrict the demand for any particular article that the supply shall be adequate to the demand. It must be the same in regard to all other articles. The series of conditions we get in this way suffices, as a rule, to settle the problem of prices. Once these conditions are fulfilled, any change in the price must alter the demand for the various goods, and so disturb the balance of supply and demand. With this the task which we set ourselves in the preceding section is substantially accomplished, and in what follows we have only to consider more closely the nature of the restriction of the satisfaction of wants that is effected by the process of price-formation.

Let it be observed first that, when one considers the total demand for finished goods in any particular individual economy, the total value of this demand, calculated on the prevailing prices, must correspond to the sum of money that the individual economy is prepared to pay for the use of them. The total demand of the entire exchange economy must also cover the total supply and, like this, represent a money value equivalent to the total sum of money allotted for consumption.

The individual demand of a good is generally dependent upon the prices of all goods, or at least of all goods which have any significance for that individual. For instance, the demand of a worker for newspapers or other objects of relative luxury, in some cases even for clothing, depends upon the prices of the necessaries of life. A certain demand for these necessaries must be met even when prices are high, and there is then only a small sum left for less urgent purposes. That this must so very generally be the case we understand when we reflect that the demand for a special article represents only a special result of the regulation of his entire consumption which the individual exercises on the basis of existing prices. Naturally, the price of the article itself is the most important factor in determining the demand for it; and it is, both theoretically and practically, of interest to find what influence a small alteration of the price has on the demand, assuming that all the other prices are unchanged.

Given a definite scheme of prices, the individual is generally compelled to restrict the satisfaction of his wants in various directions. But this restriction need not affect every branch of the satisfaction of his wants. As a rule, a number of wants can be satisfied to the point of satiety. This is, of course, mainly true of the rich, but to a certain extent even of the middle and lower class. Any man who is not very poor can buy as much ink as he likes. Even if the price of ink went up a little, he would not feel obliged to curtail his use of it. Whatever the price is, within the ordinary limits, he will completely satisfy his need. This is true of very large classes as regards ordinary condiments, particularly salt; and it is true of the more comfortable class as regards beef, beer, etc. In such cases the individual's demand for the article is independent of the price of it; but only within certain limits—only as regards fluctuations of prices that are usual. When the normal supply of a commodity is cut off by extraordinary events, and the price of it rises considerably, we find that even households which never before thought of limiting their demand for it must now do so.

On the other hand, it is a rule for the great mass of consumers that, even when prices are ordinary, they must restrict most of their wants, even important wants, and can by no means satisfy them fully. In these cases the individual's demand for the article in question is, so to say, compressed by the price. When the pressure of the price relaxes a little—when the price falls—the compressed demand expands with more or less force. This is, on the analogy of a physical force, called the *elasticity* of the demand. This elasticity can be measured by the alteration in the demand that is caused by a certain small alteration of the price. It varies a good deal in regard to different articles and individuals. When a want is met to the point of satiety, the elasticity of the demand is null: a slight fall in price does not cause any rise of the demand. The elasticity is again null when the price is so high that for the individual in question the article is practiclly unattainable: a slight fall in the price will not then create a demand. When a want is partially met, a slight fall in price may cause a proportionate rise of the demand; or the increase of the demand may be relatively greater or less than the change in price. In the first case the elasticity is equal to one: in the others more or less than one. When the elasticity is equal to one, the total expenditure for the satisfaction of the want in question is independent of small fluctuations in the price. If the elasticity is less than one, the total expenditure rises with an advance of price, and is reduced with a reduction of price. If the satisfaction of the want approaches the point of satiety, the elasticity is generally less than one. The consumption of bread by an average worker's family will not go down with the same percentage as the price of bread rises in a dear year. The want of bread, being a primary necessity, is almost sated when prices are normal, and must remain the same when there are small fluctuations in the price of bread. Hence the total expenditure of the family on bread will show just as great fluctuations as the price of bread does. The need of housing is much more elastic in large classes of a modern community. Here the elasticity ought at times to approach the figure one; and this would appear in the fact that a family spends just as much on house-accommodation whether rents are high or low. A higher elasticity than one is rare, and is only found in regard to unnecessary wants. In such cases the total expenditure of a consumer upon the want in question rises when the price falls. A man may, for instance, be led by a reduction of railway fares to spend more on travelling than he did before.

The elasticity of the demand of the several households for an article determines the elasticity of the total demand of the entire economy for that article. Here we must be careful to bear in mind that a reduction of the price can not only cause a rise of the demand, where there already was a demand, but can create a demand in households which up to that time had been prevented by the high price from satisfying their want. To know the elasticity of the demand is of great practical importance in all cases where the price of a commodity or a service has to be arbitrarily fixed or influenced in a particular direction: for instance, in fixing a railway tariff or introducing new excise duties. Theoretically, the knowledge of it is always interesting in connection with estimating the effect upon consumption of some change of prices that has taken place. Unfortunately, we have very inadequate means of getting statistical returns as to the elasticity of the demand by observation of the actual economic life. The difficulty is not merely in the imperfectness of our statistics, but also in the nature of the problem. What we want to know is how the demand for an article changes when the price is slightly altered, all other prices remaining constant. This condition is never strictly realised, and, as we shall see later, cannot be realised. Moreover, customs and tastes, and even at times the real needs of consumers, may change considerably within a certain period. Hence our observation of the effects of a change of prices within a given period is always obscured by complicating elements. To get an idea of the elasticity of the demand one may, it is true, start with a comparison of a number of typical domestic budgets of different classes of society belonging to the same period, and try to deduce from this material how the different wants are affected when the income is reduced, and therefore prices rise relatively to income. Such a study is of considerable interest in connection with our knowledge of the effect of prices on the total demand of the community and the way in which the satisfaction of wants is restricted by prices. But it is clear that from such material we can only make general inferences as to the elasticity of the demand for various commodities.

A knowledge of the elasticity of the demand for different commodities gives us an idea of the tendencies to an alteration of the demand after an alteration of the prices of the commodities. These tendencies have, in a general way, the character of a reaction against the change of prices: a rise of prices causes a reduction of the demand, and *vice versa*. This reaction against changes of prices is, clearly, an essential requisite of the stability of the equilibrium of prices, once it has been attained.

It follows from this that it suffices for the solution of the problem of prices—to the extent to which we are considering it—if we assume that the demand for each of the articles in question is settled as soon as the prices of these articles are fixed. We need not analyse the demand further in connection with the problem of prices. The extent of the demand at a given price is a tangible fact of a quantitative, arithmetical nature, and in this form it may be used directly in economic science as part of its structure. The psychological processes which lie behind this fact have, of course, a certain interest for the economist, since a knowledge of them helps us to estimate correctly the influence of prices on demand. In so far as they can be elucidated, they are best studied from this point of view; but that study clearly does not fall within the domain of economic theory proper.

We have to point this out particularly in opposition to what is called "the theory of marginal utility." The first objection to this much-discussed theory is that it is superfluous in economic science. The theory is an attempt to press the psychology of the demand into an abstract mathematical form. The "utility" of the satisfaction of a want is regarded as arithmetically calculable. When a want is satisfied in successive equal doses, the corresponding total utility increases, but more and more slowly; the final addition to the total utility, the "marginal utility," becomes smaller and smaller. This marginal utility must, in a state of equilibrium, correspond with the price to be paid for the last dose of the satisfaction of wants. This is, according to the theory of marginal utility, the general formula which governs every economic action.

If, for the sake of simplicity, we estimate the utility in money, the utility of the last unit of the commodity used for satisfying a want, or the marginal utility, must be equal to the price of the unit. This agreement between marginal utility and price in every branch of the satisfaction of wants is a sign that the total utility of the satisfaction of wants in the economy in question has reached its maximum. For every extension of the satisfaction of wants in one branch would now mean an increase of utility which would have to fall short of the price to be paid for it, whilst the money used for the purpose would be withdrawn from other branches of the satisfaction of wants, and would thus occasion a loss of utility greater than the sum of money. The whole theory of marginal utility can also be conceived as a theoretical deduction for the direction of the economy from the postulate that the economic subject aims at the maximum of the total utility.

This purely formal theory, which in no sense enlarges our knowledge of the real processes, is in any case superfluous as far as the problem of prices is concerned.

We must further observe that this deductive inference of the nature of the demand from a single principle, in which so much childish pleasure has been taken, was impossible without artificial constructions and a considerable distortion of the reality.

First, an abstract estimate, expressed in any scale of reckoning whatever, of the utility of the various stages of the satisfaction of wants in all its branches is not possible for the economic man. For such estimates he needs at least the support of the existing prices, and the most that he can do is to calculate with some probability the change of his demand that would be caused by the alteration of *one* price. His whole scale of reckoning is necessarily bound up with the actual prices. If we keep strictly to the simple facts, we can only say that men decide what they will buy when all the prices are given: decide, that is to say, upon the line to be drawn between those wants which they will satisfy and those which they will ignore. Further than that, as we said, economic science need not concern itself with the question.

Further, the principle that the marginal utility is equal to the price is by no means generally sound. Even when a want can be satisfied in successive doses, it is not at all certain that the last dose of satisfaction is equal in value to the price. As far as the wants which are fully satisfied are concerned it is, on the contrary, the rule that even the utility of the last dose is appreciated beyond its price; which is plain from the fact that these wants are satisfied even if the price is a little higher—in other words, that its elasticity is equal to null. Moreover, the various stages of the satisfaction of wants do not always run in the continuous series which the theory assumes. A tenant who rents a house at £100 will, as experience has often shown, keep the house even if the price is raised to £110. Here the marginal utility is higher than the price. Yet the tenant will not take a larger or better house, because one to suit him might, perhaps, have a rent of £120. Hence the solution of the problem of the equal satisfaction of wants on the part of the individual as it is usually formulated in terms of the theory of marginal utility is not correct. If we are to speak at all of an estimate of the value of wants, we must be content with something like the following principle: On the existing prices every want that is considered of less value than the price of satisfying it does not get satisfaction, and the other wants, which are at least held to be worth the price, are satisfied.

When we regard all the various individual economies in a large exchange economy, one may say with fair accuracy that a good that can be bought in a number of small portions and is the object of a general demand yields a marginal utility which is equal to the price of it. For there will probably be some one amongst the large number of purchasers who will think a unit dose of the good just worth its price. This purchaser is usually called a marginal purchaser. As far as such marginal demand exists it is approximately correct that the ratio between marginal utility and price is the same in every branch of the satisfaction of wants, and we can accept this thesis as a solution of the problem of the equal satisfaction of wants in the entire economy with certain reserves. But the formula is not as generally applicable nor as clear as that to which we are led by a consideration of the necessarily restrictive influence of prices on the satisfaction of wants—namely, that those wants for the satisfaction of which the economy in question is ready to pay the price are satisfied, the others not.

Thus the introduction of the idea of marginal utility is no particular gain, though it may be convenient at times to apply the phrase. In trying to make it the basis of a whole economic theory, by declaring the marginal utility to be the determining factor of price or "value," a quite untenable position has been taken up. In accordance with the principle of scarcity, it is the object of the fixing of prices so to restrict the demand that it can be met with the available supply of goods. Hence the demand for an article must be cut down, somewhere, by the price of it. Although the importance of the ultimate satisfaction of the want is then equal to the price, this cannot possibly be turned into a statement that this importance fixes the price. On the contrary, the price settles to what extent wants shall be satisfied, and therefore which is the " ultimate " want, or the " marginal " want. The price itself is settled by the fact that the demand must be reduced to the point at which it can be met with the existing supply of goods. We must, therefore, resist any attempt to represent the theory of marginal utility as a solution of the problem of prices or even of " the problem of value."

The idea that the economic man can estimate in money the importance of his wants *in abstracto*, or independently of the existing prices, has led some to compare the importance of a want measured in this way with the price actually paid for the satisfaction of it, and, if the importance is greater than the price, to regard the difference as a special gain to the consumer.* This gain or " surplus " of the consumer is supposed to be equal to the difference between the highest price which the consumer would pay for the article, if he could not get it cheaper, and the actual price. To this we may reply that the valuation of goods is essentially a matter of the actual prices, and is, in the long run, merely the decision what will be consumed in view of the actual prices. The money scale in which the article is valued has no definite meaning except in terms of actual prices. If we take two entirely different sets of prices, the valuations of an article are expressed in different money scales in the two cases and are, therefore, not directly comparable. It is true that the difference is so slight that it may be ignored when one is considering a small alteration of the price of an article that is of no great consequence in the budget of the economy in question. But we must insist that it is impossible to give an exact definition of what is called the "consumer's surplus."

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* " Consumer's Surplus," Marshall (*Principles of Economics*, Book III., ch. vi.).

It is part of the idea of an economy that there shall be a certain restriction of wants: a selection of a certain number out of an indefinite amount of wants to be satisfied. The economic principle requires that every want that is satisfied shall be more important than the one that is not satisfied. It is of great consequence to every economic order how this requirement is met. In the self-contained individual economy the required classification of wants is effected by a single will. Within the bounds of the exchange economy each household makes a corresponding classification of its wants. But for the classification of the total wants of the entire economy there is no such authority. How can there be a comparison of the importance of two different wants when they belong to two different individual economies? For this purpose the exchange economy needs a common measure of the importance of all the different wants. It finds this common standard by fixing a single price for each article of the same quality, and exacting payment of this price before the want shall be satisfied. This means that a want for which the price demanded is paid is always regarded as more important than some other want for which the price is not paid. Thus the exchange economy measures the importance of the various wants by the sums of money that are paid for the satisfaction of them.

It may be asked whether this way of realising the economic principle is the right way. It is easy to object that a hungry man's want of bread is much more important than a rich man's want of it for feeding his dogs, and that a community which satisfies the latter want in preference to the former does not act reasonably with its resources. But the objection is either to the irrational use which the wealthy make of their money, and to that extent is not an objection in principle to uniform prices, or it is, in the main, a criticism of the actual distribution of income. It is this, not the uniform price of bread, which is to blame if the poor cannot get enough bread. It might be suggested that the evil should be remedied by selling things to the poor at lower prices. If this plan were carried out all round, it would be the same thing as raising the income of the poorer classes. On what conditions this is possible, and how it can be reconciled with the bases and the economic life of the exchange economy, is a question that we will carefully consider in the last chapter of the next Book. But if the cheapening of commodities for the poor is carried out only partially, for selected classes of goods, it would amount to an encroachment upon the free choice of consumption of the poorer classes. That is a transgression of the general principle of the exchange economy which demands that the distribution of the available consumable goods amongst the various ways of satisfying wants shall be left to the individual. Attempts are sometimes made, however, particularly by public bodies, to provide certain articles at reduced prices, or even gratuitously, to the poorer classes. But, as we have said, these attempts are based upon ideas that are foreign to the nature of the exchange economy; they are really Communistic ideas. We have at the same time attempts to raise the price of other articles, such as brandy, by taxation, in order to reduce the consumption of them. Here we have a sort of paternal authority exercised over the individual's free choice of consumption, and we will say no more of it here than that it is not part of the character of an exchange economy, and we must therefore ignore it in an inquiry into the essential features of such an economy.

The fixing of uniform prices is the particular way in which the typical exchange economy applies the principle of the most "economical" use of its available goods. This fact we will take as the basis of the following studies.

§ 12. THE REGULATION OF PRODUCTION. THE PRINCIPLE OF SCARCITY.

In the preceding section we took for granted, and regarded as fixed, the available quantities of various goods. We will now drop this assumption. It is not in accord with reality, because, as most goods can be produced, the quantities of the various finished goods which are offered to consumers generally depend upon the management of production. The existing means of production can, as a rule, be used for different purposes, and thus the supplies to consumers can be greatly varied. We shall now, therefore, assume that the various elementary means of production, or those which cannot themselves be increased by production—we will, in what follows, call them simply "means of production"—exist in definite quantities or, rather, are available in definite quantities within a given space of time. Let us call them the supply *of means of production*, and regard this supply as one group of the given factors of the problem we are discussing.

The question is, then: Which kinds of goods are to be produced? The general economic principle requires that the available means of production shall be used in the most economical manner: that is to say, that production shall proceed on such lines as to meet the most important wants. Thus the realisation of the economic principle in regard to the direction of production in the economy depends upon the way in which the wants are graduated. Since we have, in regard to the regulation of consumption, recognised that the amount of money that is offered for the satisfaction of various wants is the measure of the importance of those wants, the same standard must hold good for the regulation of production. We thus come to the conclusion that the means of production must be used in such ways that they will meet the demands which will pay most. The solution of the problem is, therefore, to fix uniform prices for the means of production; to determine the prices of finished goods according to these prices; and to control production in such a way that those wants are met which are prepared to cover the price of satisfying them, determined in this way, and the others not. If proper prices are put upon the means of production the demands of consumers can be so far restricted that they can be met with the relatively scarce existing means of production. This is enough to settle the prices of the means of production and therefore also of the finished products. We thus determine both the demand and the entire direction of production. And, as is clear, this solution of the problem is merely an application of the *principle of scarcity* to the general case we are considering.

The demand for finished products is indirectly a demand for means of production. It seeks to attract the means of production to one or other use. It is a competition of consumers for the means of production; and in the exchange economy this competition can only be met by putting sufficiently high prices on the means of production to bring the demand into harmony with the available supply. If the importance of the want is measured by the sum of money that is offered for the satisfaction of it, the prices of the means of production must be uniform: that is to say, the same price must be paid for the same means of production whatever use is made of it. This secures that every want which pays the price is satisfied, and the others not; and that every means of production is used in the most "economical" way according to the standard adopted.

If, for instance, copper can be used either for kitchen vessels or in electrical industry, the most economical use of the available stock of copper requires that the coppersmith shall pay the same price for the metal as the electrician. If it were sold more cheaply to one branch of production than the other, this would clearly mean that part of the copper would be used for less important purposes than it might be. This applies to labour generally. The economic principle requires that all labour shall be used where it gets the highest wage. This requirement is met when there is only one price for all labour of the same character and quality; when this labour gets the same wage in all the different branches of production in which it is employed.

On means of production that are abundant it is not necessary to put a price, as in this case there is no need to restrict the demand. For other means of production prices must be calculated according to their relative scarcity, so that the effective demand for each—the demand that is ready to pay the price—shall be small enough to be met with the existing quantity of means of production. Thus economy requires that the means of production also shall be priced according to the principle of scarcity.

Thus the process of fixing prices in the exchange economy embraces both the elementary means of production and all the finished products for consumption, as well as all articles in the intermediate stages of the productive process. This price-fixing process is determined by the conditions which apply to it, and all the prices are then fixed, and fixed simultaneously. The social-economic work of this general price-fixing process is, to put it briefly, the realisation of the general economic principle in the exchange economy. The process effects this by regulating the demand through the exclusion of the less important wants and directing production along the line of a full and most economical use of all the existing means of production. This complete price-fixing process includes the fixing of prices for finished goods with which we dealt in the last section, the object of which is to regulate the demand in harmony with the available quantities of these goods.

Once prices have been fixed for the means of production, a price will be calculated for each finished product corresponding to the total price of all the means of production required for preparing it. In the present section we assume that this quantity of means of production is definite, so that the said total price can be estimated. This price we call the *cost* of the finished product. Cost in this sense is essentially an idea proper to an exchange economy, and is determined by the fixing of prices in the economy. The word "cost" is also used to indicate the real cost of production or the sum of quantities of means of production required. This, however, cannot be arithmetically defined, and therefore there can be no arithmetical comparison of different "costs."

It is necessary to point out the difference between cost as we define it and as it is usually defined in economic science, especially in Marshall's exposition of it.* In Marshall's opinion cost chiefly represents a personal exertion, a sacrifice which must have some compensation if it is to be made. Here we take cost in a purely objective way, as the result of the price-fixing process. For our definition of cost the scarcity of the relevant means of production is the only essential requisite. The price need only be based upon this scarcity, and is by no means necessarily conceived as a condition of the supply of the relevant means of production. We shall see that this distinction is of far-reaching importance in dealing with the settlement of the prices of the chief groups of means of production, and therefore in theoretical economics generally (compare § 18).

From the point of view of an individual economy or some special branch of production the cost of the production of any article must naturally seem to be fixed. For the demands which are made from this quarter upon the means of production are generally insignificant in comparison with the total demand of the exchange economy upon them, and the prices of them must be mainly determined by external factors. This has led some to take the cost of production as the determining factor of the price of the product. The idea is untenable, since the cost of production is not an independent entity; it is settled by the prices of the means of production, and these prices, as well as the prices of the finished products, become means of regulating production and demand through the great single process of the fixing of prices. The opposite idea also, that the prices of the means of production are determined by the prices of the finished products—in the long run by the valuation of these on the side of the demand—has not been without adherents. The whole of what is called the recent subjective theory of value is, in the main, an expression of this idea. In opposition to all these views we must insist that in the general process of fixing prices there is no graduation of prices in the sense that some of them are determining factors of the others.

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* Marshall, *Principles*, Book V., ch. iii., § 2.

The process of fixing prices which we have described means that every finished article receives a price that corresponds with the cost of producing it; or, more generally, that every demand shall bear the whole cost of satisfying it. We may call this the "principle of cost." From the very nature of cost the principle must be regarded as merely a consequence of the general economic principle. It is an expression of the economic principle in regulating the productive exchange economy by means of the settlement of prices. Hence the principle of cost has the same inherent necessity as the fixing of prices, and it belongs to the very nature of the exchange economy in the sense in which we may say this of the fixing of prices.

The absolute antithesis of the principle of cost is the "gratis principle," in virtue of which economic goods are offered to consumers without any special payment. This clearly implies an authoritative regulation both of consumption and production, and therefore, if it is logically carried out, it leads to the economic form which we have called Communism. There are, however, small deviations from the principle of cost possible without going as far as Communism. Certain articles may be supplied below cost price, or a demand may be satisfied without it paying the full cost of the satisfaction. Such deviations frequently occur in the existing exchange economy, but they are generally regarded as departures from the normal, if not as pieces of bad policy or defective organisation of our national economy, or at the most as temporary necessities.

This suffices to give a first view of the character of the price-fixing process. In reality, the matter is not so simple. The means of production that exist and are demanded to-day serve to satisfy future, rather than present, wants. Hence the connection between the prices of the finished articles of to-day and those of the means of production to-day is not direct. It is based upon the condition which we impose upon our economy that it shall keep its balance; that, therefore, all prices shall remain unchanged as long as this equilibrium is maintained; and that, consequently, the future prices, especially of finished goods, shall be the same as those of to-day.

In analysing our problem we have always to study this condition of equilibrium. The general theory of the fixing of prices cannot be anything else than a determination of the conditions that are needed for the prices to remain unchanged as they are at any given moment. This condition of equilibrium is conceivable in either a stationary or an evenly progressive economy. The former case is, of course, much the simpler; but the second also must be taken into account if we want to be clear about the fixing of prices in an economy with continual formation of capital.

In a stationary economy the demand remains constant, and is always restricted to the same extent by the constant prices of finished articles. It might then be justified, on a first view of the problem of the fixing of prices, to speak of the demand for finished goods as an indirect demand for the means of production, without going into details as to the time of the demand. But if we want to be accurate, we must regard the stationary economy as a continuous process, and we must lay down the conditions of the constancy of this process. We then find that a steady stream of elementary means of production is contributed to production, and that by means of these production pours out a steady stream of finished articles for consumers: the process as a whole is constant. Uniform prices are put on the elementary means of production, and these prices remain constant. On the basis of these the prices of the finished goods are calculated. These prices, which also remain constant, govern the demand for finished goods, and the demand also remains constant. The continuous production of these goods requires a steady accession of elementary means of production in definite quantities, and these must be in accord with the actually available resources. These conditions suffice to settle the prices both of the means of production and of the finished goods.

As the past is in itself of no interest to economics, the analysis must really begin with the present. We have then to make a transverse section of the economy as it is to-day. This section reveals the existence of a certain quantity of real capital, which, as its origin is not to be further analysed, must be put on the same footing as the elementary means of production. If this real capital is maintained, or new real capital is produced to take its place, the prices of the existing real capital must, if there is to be equilibrium, agree with the prices of that which comes from the subsequent process of production. To that extent the fixing of prices is traced to the constant new streams of elementary means of production. It is, therefore, only the real capital existing to-day, which lasts for ever, that is to be regarded from the point of view of the pricing as independent elementary means of production. It is to be put on a level with land.

In the evenly progressive economy both the accession of elementary means of production and the deliveries of finished goods are constantly increasing. The future demand will be different from the present, and this fact must not be overlooked in studying pricing. To solve the problem we have to discover the conditions of equilibrium in the evenly progressive economy with constant prices. Formally these conditions are the same as those indicated for the stationary economy. Prices are fixed by restricting the demand for finished goods so far that it can be met with the available means of production. But the supply of goods to meet the demand is in this case constantly increasing in volume, and the supply of means of production increases at the same rate. The means of production available in the present unit-period must be equal to the demands which a steadily growing demand for finished goods makes upon them. The demand in question belongs to a whole series of unit-periods from the present far into the future. The prices of the means of production must be put at such a level that the prices of finished goods based upon them sufficiently restrict this constantly increasing demand.

As the price-fixing process extends to the means of production, and therefore a price is paid for each means of production that is scarce, this price will pass to the owner of the means of production and represent an element in the constitution of his income. Who these owners are depends upon the organisation of the community, particularly upon the relative proportions of private and collective ownership; but it is not a matter of great consequence as far as our conception of the nature of income is concerned. There is, however, as we have already said (§ 7), one means of production which necessarily belongs to the individual in the exchange economy—his labour. It is only by the individual's control over his own labour that the individual economy becomes the independent economic unit, the existence of which within the total economy is characteristic of the exchange economy. Within the exchange economy, therefore, the individual economies always have independent incomes, whether these come from labour only or from the possession of other means of production; and these incomes are fixed, if the prices of the means of production are fixed. If some of the means of production are owned collectively, the relevant collective organisations derive an income from them; but they must, as we saw (§ 10), be put on the same footing as individual economies in considering the total economy.

This changes, to some extent, the idea of income.

To begin with, we conceived income as the quantity of finished goods that pass to the individual in the unit-period, adding the increase of real capital. We have then defined income, in terms of the monetary economy, as the money value of this real income. This income is now traced back to its sources and is conceived as the sum of money which the individual economy receives for the means of production delivered by it during the unit-period. This money income is partly "consumed" and partly "saved": that is to say, is used partly for the purchase of finished goods which pass into consumption, partly (directly or indirectly) for the purchase of goods which represent an increase of the real capital of the individual economy. The sum of the incomes, in this sense, of the individual economies may be regarded as the total income of the exchange economy. This income purchases the whole of the finished goods which issue from the productive process in the period as well as the increase of real capital during the period; and it thus serves for full payment of the co-operation of the means of production during the period. It follows that our idea of income remains essentially the same, though it presents different aspects from different points of view.

This entire process of the formation of income falls completely within the general price-fixing process, and is determined by it. Hence the fixing of prices includes also the process which is usually called "distribution," though it may be described as simply the real formation of income. But it will be shown in § 19 that the formation of income depends also on other elements which lie outside the price-fixing process.

The income of the individual economy is generally, as we saw, partly saved and partly consumed. Sometimes the individual needs more than his income, and he gets this from the saved income of other economies, by way of loan, for instance. The income set aside in each individual case for consumption represents "the sum of money which each household pays for the satisfaction of its wants during the period in question" (p. 74), and this, up to the present, we have taken for granted. We now find that in reality this sum of money depends upon income, and therefore upon the prices of the means of production. Possibly the individual is influenced in the extent of his saving both by the amount of his income and the prices of finished goods. The sum of money in question is then at any rate determined when the prices of the means of production are settled.*

We must now drop the assumption we have so far made in taking this sum of money as a given factor of the problem. But this does not alter the conditions indicated by which the price-fixing problem is governed. For they presuppose only that the demand for finished goods is fixed once the prices of the means of production, and therefore the prices of finished goods, are settled.

In the stationary exchange economy, in which on the whole there is no saving, the income determined by the prices of the means of production is used entirely for the purchase of finished goods delivered for consumption during the income-period. The total value of the means of production which are drafted into the productive process during the period is equal to the total value of the goods finished in the same period. The sum of money set aside for the purchase of finished goods in each unit-period is constant in the stationary economy.

In the evenly progressive economy, on the other hand, only a part—a constant fraction—of the income determined by the prices of the means of production is used for the purchase of finished goods. This part is, however, equal to the value of the finished goods produced during the income-period. It is obvious that here the total value of the means of production must be greater than the total value of the finished products. The use of means of production during the period is calculated for a production of finished goods which stretches from the present far into the future, and therefore in the progressive economy necessarily exceeds the present production. This supply of means of production will, therefore, if prices are constant, represent a higher value than the quantity of goods finished in the same period. The remainder of the income determined by the prices of the means of production is used, as we saw, to pay for the increase of real capital. The sum of money which is used in the unit-period for the purchase of finished goods increases steadily, and at the same rate as the progress of the exchange economy as a whole. This is true also, of course, of the sum of money which purchases the increase of real capital. When the conditions which govern saving are given, the rate of progress, and consequently the entire equilibrium of the evenly progressive economy, are determined. But this aspect of the problem cannot be fully discussed until we come to § 25.

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* As to the significance of the rate of interest in this connection see § 25.

Up to the present we have dealt with the fixing of prices in general, and the formation of income in particular, on the current assumption that the total extent, expressed in money, of each individual demand is given. There is no logical defect in this, as one might be inclined to suppose. In the actual economic life all the unknown factors of the price-fixing process depend upon each other, and they are only determined, and then all determined together, when we solve the problem of pricing. The demand and the income of the individual economies necessarily depend upon the prices of the means of production, and therefore can only be determined in connection therewith, by the great single process of fixing prices. This does not prevent us from, in the meantime, taking for granted the prices of the means of production, and consequently the income and the total demand of the individual expressed in money, and asking what conditions must be realised in order that, at these prices, the demand for finished goods shall be covered by production.

This method is prescribed by the nature of things for all our investigations of the general price-fixing process. The casual connection between the different variables of the matter is not a one-sided one, working in one definite direction, in which one link always follows upon another and is determined by it, but is in the nature of a closed chain of causes, in which each link depends upon all the others, and which may be followed in any direction. Economic science has wasted a good deal of time in controversies as to whether one or other group of unknown elements in the price-fixing process was to be regarded as cause or effect. It is time to cut all such discussions out of our science. We will get a more complete and more profound insight into the nature of the causal connection to which we have referred by studying in the following chapter the general mechanism of the price-fixing process.

§ 13. SUPPLEMENTARY PRINCIPLES OF PRICE-FIXING.

In real life the pricing process reveals a series of complications which we have hitherto left out of consideration. We started with the assumption that the cost of production of an article is always determined as soon as the prices of the means of production are given. The reality differs from this assumption for various reasons. There are, as a matter of fact, very general cases in which the cost of production is indefinite in one or other respect. In these cases the problem of fixing prices is obviously open to some extent, and can only be settled when certain new conditions are introduced. This means that the principle of scarcity alone is not enough to determine prices, but must be supplemented by certain other principles which represent new conditions of pricing and put an end to the vagueness of the problem. We shall find that these supplementary principles are themselves consequences of the general economic principle, and at least in the actual economic life act as normal rules in the fixing of prices.

In the first place, the same article may be produced in different businesses under more or less favourable conditions. For the satisfaction of the demand those enterprises must be selected which have the best conditions of production. But it is possible that the demand cannot be satisfied unless a number of businesses with different conditions are engaged in the work. In this case the same article will be produced in different and independent businesses at a different cost, though, being an identical article, it must have one price. At what price is it to be sold? The general economic principle clearly requires that the article shall have a price corresponding to the highest of the various costs of production. Otherwise in the business with the highest cost of production the means of production would be used to meet a demand which would not pay the full price for them; which clearly means, according to the way of classifying wants which is peculiar to the exchange economy, that a less important want is satisfied in preference to a more important. If the price of the article would not pay the cost of production in the business in question, that business would be better excluded or closed down; which, as there is here a question of separate businesses, could be done independently of the others. Consequently, in virtue of the general economic principle a price must be put upon each article which will cover the cost of production in the business which has the highest cost of production amongst all those that have to be employed in meeting the demand. This is the *first* supplementary principle of pricing. We will call it the "differential principle."

The explanation of the name is as follows. The other businesses, which have a lower cost of production, receive for the article a price which to a greater or less extent exceeds the cost of production. In each such business there is accordingly a surplus above the cost of production, and it represents a *differential profit* on the part of that business. To whom the profit ultimately goes is another question; it depends upon the organisation of the economy and will be considered in the next two sections. It is beyond question that these differential profits are inevitable in the exchange economy. We may regard the necessity of this as a special aspect of the principle, already formulated, of price-fixing. The name "differential principle" represents this principle from the point of view of fixing the prices of the means of production.

The great practical importance of the principle will often be realised as we proceed. A difference in the cost of production in different businesses is natural on account of the different conditions of production in different places. One of the chief reasons is the unequal fertility of the soil in various places. As the great demand for products of the soil requires that soils of very different quality shall be extensively cultivated, the differential principle has here a very clear and general application. What share the principle has in fixing the rent of the soil we shall see later (Chapter VII.). In the next place, the different conditions of trade, especially of transport, cause great variations in the cost of production, if we take the word as we do invariably here, in a sufficiently wide sense to include the cost of conveying the products to the consumers. The milk-supply of a large town, for instance, employs a number of agricultural concerns with different costs of transport. The town must, on the differential principle, pay a price for milk corresponding to the highest cost of those engaged in the milk-supply, and therefore the better placed firms will make a differential profit. We shall have to take account of these things in studying the rent of land. In the third place, differences in the cost of production are due to a large extent to differences in labour-output and organisation. A fourth and very important cause is differences in the size of businesses. The large business has very often an advantage over the smaller, as it works with lower costs relatively to the extent of production. What the differences mentioned in the last two cases mean as regards the profit of employers we shall see later (§ 18).

Having now dealt with the special case of variations of cost where there are several different businesses engaged, we will in what follows assume that the cost is the same in all of them and consider the case of a single business.

The cost of production in a business may, in the first place, be indeterminate for the reason that it varies with the size of the business. If the cost of production *rises* with the extent of production, it is clear that the price of the product must, on the analogy of the case already discussed, cover the cost of the ultimate extension of production. We will ignore this case and consider the opposite case, in which the cost of production *decreases* with the increase of production.

This is a very common case in actual economic life. The very general advantage of the large over the small business is mainly due to the fact that production on a large scale tends to reduce the cost of production per unit of the product. What price, then, is to be put upon articles produced in these conditions? In a sense it may be said once more that articles are produced at different costs of production; the first products have a high cost, the others a lower and decreasing cost. But the differential principle does not apply because production at the higher cost is inevitable; the latter lies at the bottom of production, so to say, not at its culminating point. It might be supposed that the price would be fixed by the extra cost that is entailed by the final extension of production by a unit. This is not possible, however, because the total cost of production would not be covered by the total price calculated according to this unit-price. The general economic principle requires that this should be so. This requirement is met when the price of the product is equal to the ratio between the total cost and total product, or the average cost of the production that is needed to satisfy the demand. The agreement of the price with the average cost is a new condition of pricing: a condition that is necessary in the present case to make the price-fixing problem more definite.

It remains to answer the question how far production is to be extended. It is only when this question is answered that prices can be fixed on the basis indicated. If we take the price of the product as known, the demand at this price and therefore the extent of production, and even, if the prices of all the co-operating means of production are taken for granted, the total cost of production can be calculated. This total cost must be covered by the total price which we get by multiplying the unit-price of the product by the demand. This settles the unit-price generally—that is to say, expresses it in the prices of the co-operating means of production—and the cost of production is no longer indeterminate. At the same time the extent of the demand, and consequently of production, is determined.

We may, therefore, lay down the principle that in the case of indeterminate cost of production which we are considering the price must be equal to the ratio of the total cost to the demand at that price, and must therefore be arrived at by a uniform distribution of the total cost over the demand, and must agree with the average cost calculated in this way. It often happens, however, that this condition is fulfilled by two or more prices. This is quite natural, as falls in prices or in the average cost correspond to increases of the demand or increases of the extent of production, and so price and average cost can often meet each other. If we assume that the price is once equal to the average cost, and that both are, within certain limits, in inverse proportion to the demand (or the extent of production), the agreement between price and average cost must clearly remain within the said limits, and therefore our requirement, that the price shall be equal to the average cost, is realised, within certain limits, by all prices. Hence in all cases in which our requirement does not definitely fix the price it must be supplemented by another requirement. This can only be that of all the prices which meet the first requirement the *smallest* shall hold good. In that way wants are satisfied to the largest possible extent.

We thus reach our *second* supplementary principle of pricing: when a larger output means cheaper production—when, that is to say, the average cost of the article, based upon the total production, is lowered by an increased production—the price of the article must, for the sake of equilibrium, correspond with the average cost of production. When a number of prices fulfil this condition, the lowest is to be selected. We will call this *the principle of pricing at falling average costs.*

The assumption of this principle is that the total cost of production increases more slowly than production itself. There is a special case in which the total cost is constant within certain limits, and therefore does not increase as production increases. When a durable good can be used in various degrees, without our needing to take into account any increased amount of deterioration, and therefore the amount of service it renders depends upon the demand for it, or when a personal activity can be enjoyed by an indefinite number of people at the same time, and therefore represents a number of services that depend upon consumption, the cost of the individual service actually supplied is indeterminate: that is to say, it is not determined by the prices of the means of production called into use. If, as we always do here, we take the productive process in the broad sense in which it includes the actual rendering of service, we may say that the cost of production of the services in question is indeterminate. The pricing of these services cannot, then, be based upon the principle of scarcity, as there is no direct need to limit the demand—at least, not to the extent that really happens in fixing prices—on account of scarcity of the available services.

In certain cases we may, as we saw (§ 10), refrain from fixing any special price for the services in question, and cover the cost of them according to the rules of the collective satisfaction of wants. This, however, is not always possible, especially when the services in question are in the midst of the productive process and are used for further production, and consequently fixing a price for them is a link in the general process of pricing. In point of fact, the problem of fixing prices for services of this sort turns up very frequently in the actual economic life.

We get a correct idea of the kind of difficulties that are encountered here best by taking a concrete instance.

Let us suppose that a tramway company has to maintain the traffic on a certain system of lines according to an officially imposed plan. We take the cost for granted. But that does not settle the cost of the actual conveyance of the individual passenger or the cost of the actual number of passenger-miles run. An objective calculation—that is to say, based upon the prices of the co-operating means of production—of the cost of production per passenger-mile is therefore impossible. If an attempt were made, as is often done, to calculate the "real cost" and consequently the "correct price" of the passenger-mile according to the actual average cost on a certain existing tariff, it might easily have serious consequences. It might happen, for instance, that the cost of the passenger-mile would exceed the actual price, and one might then be inclined to conclude that the price must be raised. But raising the price would probably reduce the traffic considerably, and so raise the cost of the passenger-mile; and there might then be a further advance of prices, with the same result.

The correct solution of the problem, as is clear from our discussion of the general case, is to make the price equal to the average cost of production. But in doing so the average cost must not be taken as a given factor of the problem. It always depends upon the demand, and the demand itself is always influenced by the price. If the equality can be attained—which is by no means always certain in practice—it determines the correct price as a function of the prices of the co-operating means of production: that is to say, it enables us to calculate the price, which in the given case we have to assume to be the cost of production, from the prices of the means of production, and thus the normal conditions of the pricing problem are established. To this requirement, that the price shall agree with the average cost of production, we must, as we have shown, add a second requirement—that the lowest price which meets the condition shall be selected. For the special case we are considering, therefore, our secondary supplementary principle of pricing assumes the following form: when the cost of an equipment is fixed, and therefore the equipment can be used to any extent (within certain limits), without increasing the cost, the price of a single service must be calculated according to the lowest amount which gives a total return corresponding to the total fixed cost. We will call this principle—which is, it is true, not an independent principle, but merely a special case of our second supplementary principle—the *principle of pricing when the average cost is fixed.*

We see that this principle contains two requirements, one general and one special. According to the former the fixed total cost must be spread uniformly over the services actually demanded: that is to say, the price of the individual service must be calculated as the ratio of the total cost to the extent of the services actually demanded. In the cases in which this amount of services can be regarded as given, the price of the individual service is settled by the general requirement. This not infrequently happens, as a matter of fact, in productive business. The daily cost of the rotary press of an important journal, for instance, must be spread over the total number of papers printed daily. From our present point of view this number may be taken for granted: that is to say, it does not depend upon the printing cost per paper, as a change of it will scarcely entail a change in the price of the paper. If the edition of the paper is large, the share of the daily cost of the press that falls upon each paper will be correspondingly small.

This result brings out one aspect of the advantage of large businesses. They are in a better position to use those means of production which represent fixed costs, and can therefore allow a lower price for each individual service of these means of production. The calculation of the price of the single service is important because it shows whether the purchase of a special means of production, such as a rotary press of a certain type, capable of rendering many services, is profitable. If the number of papers to be printed is rather small, the cost of printing each copy on a large rotary press will be too great; it will be cheaper to use a smaller press. If, however, a large number of copies are to be printed, the cost of printing each will be very small on a large machine—smaller than on a small press. The advantage of the large business, its capacity to use larger and (if they are properly used) cheaper machines, installations, etc., is clearly seen here.

The cost of production of a commodity may also be indeterminate because different productive methods are technically possible, but entailing different costs. If one method, at any of the practically relevant prices of the means of production, is clearly the cheapest, it must, of course, be preferred. Any other procedure would use means of production to meet the demand in question, which would be of greater value in satisfying other demands; and this would run counter to the economic principle. The cost of production is then no longer indeterminate. If, however, the situation in any branch of production is such that the question which is the cheapest method of production cannot be answered in advance, but depends upon the prices of the means of production—is influenced by the actual variations of these prices—the choice of the method of production is not independent of the prices of the means of production, and there is a certain indetermination in the pricing problem. The requirement that the cheapest method of production is to be chosen is then of actual importance in fixing prices; it represents a new condition of pricing, and this removes the indetermination of the problem. We will call this condition the *principle of substitution*, and formulate it as a *third* supplementary principle of pricing. It means that, if one method of production can be substituted for another without any change in the outcome of production, that method must be chosen which is cheapest, considering the actual prices of the means of production.

The substitution of one productive method for another need not necessarily mean a complete transformation of production. It often means merely an exchange of a certain quantity of one means of production for a certain quantity of another. When a quantity of a means of production or of a group of such means can thus be exchanged for another without altering the outcome of production, we speak of these quantities as reciprocally *substitutable* in the relevant productive process. The principle of substitution requires that of substitutable quantities of the various means of production, or groups of such, those shall be chosen which are cheapest on actual prices.

As an instance of this substitution of one group of means of production for another we may take the replacing of the steam machinery of a factory by a complete electrical installation; and, as an instance of a limited substitution, the introduction of a type-setting machine in a printing-works where the compositors had hitherto set up the type by hand.

When a definite number of individually distinct methods of production are in question, we may, when the prices of the means of production are given, calculate the cost of each method, and settle which is the cheapest, and is therefore to be preferred, on the principle of substitution. But it is also conceivable that a method of production may continually vary, certain means of production displacing others in very small amounts without affecting the outcome. When this is the case, we must choose another way of applying the principle of substitution. Let us suppose, for the sake of simplifying, that there are only two means of production or groups of such means in competition; and that, therefore, the method is only altered in the sense that one means of production displaces another gradually, in very small amounts. To get a simple illustration of such substitution, we may think of the broad margin for variation in the feeding of domestic animals, or in fertilising the soil, or of the gradual substitution of motors for horses in the postal service. If we follow up some such process of substitution in a certain direction, we shall generally find that at every step a small ultimate amount of one means of production may be substituted for a definite ultimate amount of another, but that the proportion of the substitutable quantities constantly varies. The question is, then: Where is the point of lowest cost of production? To what extent must the one means of production displace the other? Which is the best proportion of the quantities of the two means of production? As long as one of the substitutable quantities is dearer than the other, the point has clearly not been reached; for in that case a cheaper method of production can be had by substituting a small amount of the one means of production for the other. The test of the cheapest method is, consequently, that the last quantities of the two means of production, employed in production and mutually substitutable, shall have the same price. This equality represents the principle of substitution in the case we are considering. It obviously determines how much of the two means of production shall be used on given prices, and therefore also settles which method of production is to be chosen, at any particular level of the prices of the means of production. This puts an end to the indeterminateness of the problem of fixing prices.

How much of the two means of production is to be used clearly depends upon the ratio of the prices of the two. If this ratio changes in favour of one of them, making it cheaper than the other, it will still further displace the other until a new *substitution point* is reached, at which the final substitutable quantities are of the same price, and the substitution is a matter of indifference. Hence the position of the substitution point depends upon the ratio of the prices of the means of production. If the price-ratio thus settles the substitution point for every business, it also obviously settles for the entire community the proportional quantities of the two means of production that are to be used.

Let us now imagine that in a business with only two means of production (or groups of such means) which can continually displace each other, one is retained to an invariable amount, while the amount of the other is steadily augmented. We assume that this increase is by equal amounts, and that all prices remain constant. In that case each such amount has the same price; and we may select the amount in such a way that the price is equal to one. We call the addition to the output which corresponds to the last amount added the *marginal productivity* of the mobile means of production. When the most favourable combination of the two means of production has been reached, it is clear that an increase of the mobile means of production by one fraction will make an addition to the output that has the same price as this fraction of the means of production. In other words, every pound that is sacrificed to the means of production in question will reappear in a rise of the value of the product by one pound. The principle is formulated thus: The price of the factor of production is equal to its marginal productivity.

Just as some authorities tried to base the theory of pricing or of "value" on the idea of marginal utility (§ 11), so it has been attempted to give the marginal productivity as the determining factor of the price. The fundamental error is the same in both cases. The marginal productivity is not a given factor of the pricing problem, because the relative quantities of the various means of production which are to be used according to the principle of substitution can only be settled when the prices are taken into account. Marginal productivity and price are, as a matter of fact, two entirely equal unknown elements in the pricing problem, and it is therefore impossible to give one as the determining factor of the other. We must, moreover, bear in mind that the marginal productivity can only be strictly defined in cases of a continuous substitution in the sense we have described.

When a business uses the mobile means of production less than the principle of substitution would require on the actual prices, every further pound that is applied to this means of production will improve the economy of the business and therefore raise the value of the product by more than a pound. This excess will, of course diminish up to the point of substitution, where it vanishes. On the other hand, if the business already uses the mobile means of production more than the principle of substitution sanctions, the effect is the opposite. In that case an increase of the means of production will be prejudicial to the business; it may still raise the value of the product, but not to an amount equal to the increased cost of production. If, for instance, suitable means of production are used in increasing quantities on a given piece of land, the value of the product will at first rise more than in proportion to the cost expended on the means of production. Then a point will be reached at which the rise of the value of the product is equal to the rise of the cost, so that any further advance in the employment of the relevant means of production means less rise in the value of the product than in the cost. We shall study the economic significance of these things later, in our chapter on ground rent.

The fact that an enlargement of the business in many cases leads to a relative increase of the returns often depends, as we have seen, upon the possibility of a more complete use of certain apparatus with fixed costs. In that case the increased returns plainly mean that a larger number of other means of production can profitably be combined with the said apparatus, and therefore merely shows that the most advantageous combination of the two groups of means of production has not yet been reached.

Up to the present we have always assumed that in the productive process under consideration only *one* article is produced, of one and the same description. But the cost of production may also be left indeterminate because a number of different articles issue from the same productive process. We will call these *joint products.* Frequently the proportions of the quantities of these articles may be changed by a suitable modification of the method of production. But we will consider only the simple case of the productive process in question making two or more different articles in fixed proportions. There are many instances in practice of an approximate realisation of this condition. In the Thomas process, for instance, pig-iron and Thomas phosphate are produced simultaneously in definite proportions according to the quality of the materials. Municipal gasworks produce gas and coke in the same way. Argentine cattle-breeders produce meat, hides, and bones. Wheat-growers produce wheat and straw. In all these cases the total cost of both products is fixed; but it remains open how much of the cost is to be put upon each of the products. Here again, therefore, we come to a point where prices are indeterminate, and a supplementary principle of pricing is necessary to fix them.

How much one or other of many such joint products " really costs " we cannot say. It is waste of time to try to answer the question. All that we can do is to find a principle on which we may fix the prices of such products. That is not difficult; it is the principle of scarcity. We have only to assume that the productive process begins with the joint products, and that they are to be regarded as primary means of production which are available in definite quantities. Then, according to the principle of scarcity, prices must be put on them which are just as high as is necessary to adjust the demand for them to the available supplies. In other words, the prices of the joint products must be so regulated as to secure a complete clearance of everyone of them. The quantities of the joint products are, we assume, in fixed proportions. The total quantity may, therefore, be defined as a single arithmetical magnitude. This total quantity, again, determines the quantities of all the joint products. Once it is known, we can, with the aid of the above assumption, calculate the total prices of the joint products, and therefore the selling price of the total product. There is, therefore, a definite relation between the price of the total product and the quantity of the product that can be sold at that price. We may now, therefore, regard the sum of the joint products as the final outcome of a productive process which begins with the really primary means of production. The demand for this final product is given as soon as a price is put on it. Hence it has in the price-fixing process the same position as any other product, and the pricing is determined as usual by the principle of scarcity.

We may call this method of fixing the price of joint products the *principle of the pricing of joint products.* We see that this *fourth* supplementary principle of pricing is only a direct application of the principle of scarcity, and it has, therefore, the same general validity. The simplest way to formulate it is that the condition is attached to the prices of the joint products that they shall all be entirely disposed of: that is to say, that the demand for the products shall be proportional to their relative quantities. In this way the height of the prices of the joint products, and therefore the absolute extent of production, is fixed on general rules in connection with the general pricing process.

In modern industrial conditions this principle has become very important in a number of branches of production. This is especially true in regard to the economic use of waste for making various by-products, in which extraordinary progress has been made in recent years.

§ 14. The Organisation of the Modern Exchange Economy.

In the preceding sections of this chapter we have studied the requirements of the general economic principle in the exchange economy. We find that these requirements come to light in a process of pricing that is regulated by the principle of scarcity and the supplementary principles of pricing. As the supplementary principles really serve only for an exacter determination of the idea of cost, we may, for the sake of brevity, call the process a fixing of prices on the basis of the principle of cost (§ 12). In this we take the exchange economy in its widest sense, as we have made only the assumption which is essential to the exchange economy, that there are within it independent individual economies which receive a money income for their share in the productive process, and regulate their own consumption within the limits of their available money resources, and thus direct production. Our results hold good, therefore, of every exchange economy, whatever its particular organisation or legal order is. It is clear that the realisation of the general economic principle is most important to every exchange economy, since the degree of perfection with which it is carried out is the measure of the effectiveness of the economic order in question. Hence the study of pricing, as based upon the said principles, must, since it elucidates the essential processes within an exchange economy that meets the ideal economic requirements, always have a fundamental position in theoretical economics.

If we want to get a deeper insight into the actual economic life and the existing economic organisation, we must inquire how far the economic requirements are met by this exchange economy. If our inquiry shows that this is substantially the case—that, in other words, our exchange economy is substantially regulated by fixing prices on the basis of the principle of cost—the principle of cost is the proper starting-point for the study of the economy. This means that in the first elementary theoretical study of our existing economy we ignore any deviations from the principle of cost. We do not, of course, overlook the possibility of there being such deviations, but we reserve consideration of them and their disturbing influence for further inquiry. In doing so we act like the astronomer who first describes the movements of a planet as if it were not affected by the other planets, and so reaches the Keplerian system, and then considers the perturbations caused by the other planets. Only, to proceed in this way, one must make sure that the first movement represents the essential one.

The organisation of the modern exchange economy, therefore, is to be tested by the way in which it meets the requirements of the principle of cost. This will enable us to learn the *means* which our economy uses in realising the principle. We shall find that they are of different characters; that they vary a good deal in practice as well as in political opinion. Hence, while they may be features of the present condition of the economy, they may not have the essential character that is required of the bases of a general theory of the exchange economy.

When the exchange economy was still young, in the Mercantile period, it was supposed to be self-evident that it needed a central control, which had in the main to be exercised by the State. The distribution of human labour amongst the different industries and localities was effected by the guilds, or even by legislation. The other productive forces also were distributed according to an official plan and supervision. For instance, the Swedish iron industry, which was very extensive at this time, was so localised in different places as to provide sufficient fuel from the surrounding forests and sufficient quantities of ore to each centre, or, in the case of finishing works, sufficient pig-iron. In other words, the available means of production were distributed in a way that seemed best considering the condition of transport at the time. The Mercantile State had a thousand different rules for disposing of the commodities produced; and it also undertook to regulate consumption—to control it entirely as regards the most important of all commodities, wheat. The Mercantilists thought that an advanced system of such regulations was indispensable for the proper guidance of production based upon the division of labour and trades, and carried out by private enterprise; that this was the only way to keep the economic activity together and make a perfect national economy of it. There was a good deal of talk about liberty in the Mercantilist age, but liberty was very narrowly conceived, according to our ideas, and no one seriously questioned the need of a central and official control of the economic life.

The idea that an exchange economy in which the entire production is undertaken by private employers working for their own profit, and broken up into isolated partial processes, can automatically regulate itself, and form a connected and complete economy, and therefore does not need any official regulation, is entirely opposed to the older views. This idea, which was destined to revolutionise practical political economy, was reserved for Liberalism. It was especially developed by Adam Smith. The goal of his economic policy is a social order "where things were left to follow their natural courses; where there was perfect liberty, and where every man was perfectly free to choose what occupation he thought proper and change it as often as he thought proper." The interest of the individual would then impel him to seek the most profitable employment. The productive forces are thus distributed correctly over the various branches of production, and no official regulation is required. On the contrary, every attempt of the State to encroach with its rules upon the economic life has probably a bad effect upon the economic qualities of the system. Adam Smith gives us his view of the self-regulation of the free economy in the classic words: "Every individual is continually exerting himself to find out the most advantageous employment for whatever capital he can command. It is his own advantage, indeed, and not that of the society which he has in view. But the study of his own advantage naturally, or rather necessarily, leads him to prefer that employment which is most advantageous to the society." "Every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it." "He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention."

Hence free competition is the means by which the exchange economy regulates itself. But there can be no free competition as long as the economic individuals are bound together by some organisation. Even the social intercourse of people of the same trade is injurious to free competition, as it easily leads to "a conspiracy against the public" and an attempt to raise prices. The ideal is a society that we may call "atomistic," consisting of isolated individuals who only come into touch with each other economically and above whom there is merely a State which has nothing to do but see to the legal order of the economy.

The theory of the regulation of the economy by free competition is very simple. Prices are settled by supply and demand. As all purchasers wish to buy at the cheapest price, no vendor will normally be able to demand a higher price than the others. There can, therefore, be only one price for each commodity. Whenever the demand for a commodity is predominant, the vendors will take the opportunity to raise the price. This will cut down the demand, until it can be met by the supply. If the price rose further, the demand would be so much restricted that the supply would be excessive, and, in order to get rid of their wares, the vendors would take a lower price. The market can, therefore, only be in a state of equilibrium when prices are such that demand is adjusted to supply. This market also regulates production. If insufficient productive forces are devoted to a certain kind of production, and therefore the demand for that particular product cannot be met at the current price, the rise of the price that follows will not only cut down the demand, but will attract new productive forces to this particularly profitable branch of production, and so cause an increase of production which must continue until there is a balance of supply and demand. This increased production will, perhaps, check the rise of the price a little, but generally equilibrium implies some increase of price. If, on the other hand, there is overproduction, at certain prices, in any branch of trade, the producers are compelled to sell their commodities at reduced prices. Production thus becomes less remunerative, and productive forces are withdrawn from that branch of trade; and this cuts down the supply. At the same time the lower prices stimulate the demand, and equilibrium is restored.

According to this theory, therefore, under the reign of free competition the play of supply and demand would determine prices in harmony with our principle of scarcity. Prices would not only be fixed for commodities, but also for services and means of production of all sorts; and the process would thus prove a general regulator as regards both choice of employment, the distribution of the productive forces of the community amongst the various branches of production, and the whole satisfaction of wants.

It is thus quite intelligible that free competition was made the starting-point for the whole of theoretical economy, and the work of the science was seen in the study of an exchange economy governed by free competition. This point of view is, however, only justified if free competition really has the effects which the theory assumes; if, that is to say, at least in a general way it settles prices according to the principle of cost, and does in fact predominantly rule our exchange economy. In fact, strictly speaking, even then it is only justified if free competition is an essential element in the process of pricing and in the regulation of the economy affected thereby. To what extent these conditions are fulfilled we have now to inquire.

The regulation of production by free competition which the classical theory felt justified, for the reasons given, in regarding as a general law depends upon two important assumptions; and these were nearer the truth a century ago than they are to-day.

In the first place, the theory presupposes a perfect *mobility* of all the means of production. It must assume that the productive forces can be transferred without friction from one branch of production to another according to the state of prices. But to a very great extent actual production uses fixed capital which, when it can no longer be employed for its original purpose, cannot be used for other purposes or transferred to other places, or not without more or less substantial losses. The capital that is used by the boot manufacturer to get stitching machines cannot, when the boot trade is in difficulties on account of overproduction, be removed from that industry and used in another. It is tied up once for all in the boot trade. This is the case with most specialised machinery, and to a less extent with more general machines, factory premises, etc.; and it is supremely true of railways and similar fixed installations, such as canals, gasworks, etc. When a railway does not pay, it is a misfortune, at least for the shareholders; but there is no remedy. The capital is, as we say, " tied up " in the business. To a certain extent this is also the case with specialised professional work.

Hence in these circumstances the regulation of production by prices cannot be as complete as the theory supposes. When the price of an article falls, because the supply exceeds the demand, and no longer covers the cost of production in a certain business, the business would, on this theory, cease, and the supply be curtailed, so that the balance would at length be restored. The theory has deduced from this that the price must always cover the cost of production, or at least that there must be such adjustment in the long run, even if it be disturbed for a time. We know from experience that the inference is wrong. If the capital is tied up in a business in the way we have described, the business need not be abandoned because the price of the product does not entirely cover the cost of production. As long as the price makes it possible to cover the current expenses of the business, and give some small return on the capital invested in it, it is better to continue producing than abandon the business. In the latter case the capital would be lost altogether; in the former it does get a small return. In these circumstances it is possible to maintain for a long time a business that does not cover the full cost of production. In periods of economic depression production below the actual cost is a very common occurrence.

As a rule, on the other hand, all real capital must be used up in the course of time. Most real capital is used up rather quickly by the normal process of production. Hence the effects of an economically unsound use of capital are limited in time. The economy constantly faces the task of creating new real capital, and it is, therefore, always in a position to regulate its new production of capital according to the requirements of the principle of cost. In such circumstances the principle of cost represents the normal pricing process of the economy, about which the actual process always oscillates. Free competition is, in consequence of the lack of mobility of fixed capital (and of labour, moreover), not capable of completely effecting this normal settlement of prices.

The theory which regards free competition as the means of realising a normal scale of prices further assumes the existence of a *market*. The essential requirement of this market is that a number of small purchasers shall face a number of small sellers. The word "small" means here that the demand or the supply of the individual is, in comparison with the total demand or the total supply of the market insignificant, or is, as we say, a magnitude of the second order, and so has little influence on the market. A stable equilibrium is only possible in this case, as both theory and recent experience show.

There are various such markets, but it would be an error to suppose that they, as it were, arise spontaneously, or are part of "nature." Free competition was mainly conceived in classical economics as a non-encroachment of public authority, the absence of deliberate organisation and regulated co-operation. But these purely negative assumptions do not create a market. The modern municipality no less than the medieval organises markets for the necessaries of life. It builds market-houses and slaughter-houses. It appoints inspectors and other officials, and in this way it provides a regular supply of the necessaries of life at prices corresponding approximately with the actual scarcity of the means of production. Regular quotation of prices and an organisation for securing sales at these prices are essential features of any advanced market. These conditions are best fulfilled by the large Exchanges for produce and shares. The proper work of these is to determine prices in harmony with the actual situation of supply and demand, and they are, notoriously, the outcome of a strict and highly developed organisation. In all these cases of the creation of a market there is a state of things which seems most nearly equivalent to the rather vague expression "free competition." There is, then, free competition to a certain extent in our modern exchange economy, but it is not the spontaneous condition of an entirely unorganised and unregulated economy. It is the fruit of deliberate efforts to create the conditions of a rational fixing of prices in accordance with the principle of scarcity.

It is only when there is an organised market of this sort that sales are so far secured that it is possible to produce "for the market," and the supply is such that consumers can expect to find their wants met. When this condition is not fulfilled, we have only a vague "market"—a hope of finding purchasers—for which it is either quite impossible to produce, or only with great difficulty; moreover, as there is no regular market, there are no regular price-quotations. It then often happens that sellers cannot feel sure of always finding a purchaser. In all these cases we see strong tendencies to put an end to the free competition and bring about closer relations between producer and consumer.

In modern conditions the technical character of industrial enterprises and the superiority of the large business make it necessary over increasingly large regions to have extensive industrial units. Railway enterprise is, perhaps, the most conspicuous instance. Next to it are other trade enterprises, such as telegraphs, telephones, etc. But even in the sphere of production in the narrower sense, such as the iron, electrical, electro-chemical, and sugar and other industries, it is often necessary to have the units on a very large scale.

When these industrial units are large even in proportion to the total demand, there can be no market, and free competition is unable to bring about equilibrium. Here we must distinguish three different cases.

First, we have to consider the case of a few large producers over against a number of small consumers. In that case, if any branch of production were particularly profitable, new businesses would be set up or existing businesses enlarged, according to the theory of free competition, and thus the supply would be augmented so much that the profit would sink to the normal level, but not go below it. But equilibrium cannot be secured in this way if the coming in of one single new business means a relatively large increase of production, or if even a moderate extension of one business materially affects the selling prospects of the others. This is very often the case in modern conditions. In some industries—for instance, in the production of steel rails, in the weaving of curtains, or, to a less degree, in the sugar industry, etc. —the smallest business unit that is technically and economically effective is so large that one or a few works are enough to supply the wants of a whole country, of small or medium size. In these fields any new competition will seriously threaten the returns of the whole industry. If a new enterprise enters into competition with the existing, or if one of them is greatly enlarged, the result will in all probability be that all the businesses will cease to pay. As, however, a good deal of capital is sunk in each, none of them will have to close down because the full cost of production is not covered; the competition may last a long time and be very keen. In such circumstances those interested are simply compelled to protect themselves against a free competition that is irreconcilable with healthy economic activity, and we therefore find in the modern business world a strong tendency to organise the satisfaction of wants in some other way, without free competition. These tendencies take the form of creating trusts and syndicates, in which the body of consumers is either divided amongst various producers or is supplied by a single distributive organisation of the producers. In either case one purchaser will find only *one* seller; there is no longer a market or a free competition of sellers.

The difficulties of free competition are seen very clearly in the case of railway enterprise, and other large businesses, as well as in businesses for the distribution of water, gas, and power. The fact that *one* railway pays well does not prove that another would pay in the same district. If a competitor appears, possibly neither will pay, and the capital invested in them is to some extent lost. Free competition properly so called is, in fact, not possible in this field because public concessions are necessary for securing the land. As a rule, the public authority gives such a concession more or less the character of a monopoly, accompanying it with careful stipulations as to its duties, its relations with other lines, etc. In all these regulations there is an attempt to maintain the principle of cost, when it cannot be realised by free competition.

Secondly, we have to deal with the case in which a number of small producers confront a few large consumers. Take, for instance, the relation between sugar-beet growers and the sugar industry. The farmer cannot grow beets for an indefinite market. The cost of transport is too high to allow the beets to be sent far, and the individual grower has, as a rule, only one customer to produce for. As he is absolutely dependent upon this buyer, he must enter into close relations with him and make contracts in advance. The sugar works, on the other hand, must have a guarantee that it will be supplied with beets. There is thus a tendency for the works to deal collectively with the corresponding beet-growers, and for the price of beet and the conditions of delivery to become uniform. As a rule, the price will cover the cost of production to the grower.

Thirdly, a few large producers may confront a few large consumers. Free competition and an open market in the proper sense are then impossible. The producers cannot produce in the mere hope of being able to sell. The consumers are equally unable to leave it uncertain whether their demands will be met. It is absolutely necessary to establish closer relations between producer and consumer.

For the security of both producers and consumers it is necessary to draw up contracts of delivery, often for long periods. German ironworks used to provide for their need of Swedish ore by contracts which often ran for ten years or more. On the other hand, the iron-producers readily sell their output for long periods in advance. We see that modern large-scale industries work on commission to a great extent in the same way as the older artisans used to do. It is only readily saleable products of the "heavy" industries that are, to some extent, produced for the market. The consumption of pig-iron, for instance, is so enormous that even a large blast-furnace may be regarded as a small producer relatively to the world-market. There are, therefore, certain markets with regular quotations for this commodity (Glasgow, Cleveland, Pittsburg). On the other hand, locomotives, railway trucks, steamships, bridges, large iron structures for building, large power-machines, war material, and great masses of half-manufactured goods in the respective industries, are produced to order. There is, it is true, a strong tendency towards standardisation. Rolling mills try to produce only "standard sections," and engineers must construct accordingly. In the engineering industry small tool-machines, dynamos, steam-engines, etc., are standardised. There is an effort wherever possible to create the conditions of production for the market. But, in order to secure the possibility of being able at all times to buy and sell, a large modern business often finds itself compelled to establish solid backward as well as forward connections. For this purpose shares are often taken, so that a large industrial undertaking often comes to be "interested" in a number of concerns of quite a different character—for instance, steel-works in blast-furnaces and docks, electricity works in metal-works, tramways, electric light stations, etc. In quite recent times, complete ownership is replacing shares. Affiliated companies are set up for the purpose of supplying the main concern with materials or half-manufactured products, or finding a market for its products. With the same object existing enterprises at successive stages of production are brought together under a single control. This process is called the *integration* of industry. It is especially advanced in the iron trade, a typical example being the American Steel Trust; and in the electrical industry, in which the large concerns control the whole process of production, from the raw materials to the very varied applications of their products, in central power stations, electrical railways, electric light works, etc., sometimes even on the commercial side of the trade. In these cases the entire production, from the raw materials to the ultimate satisfaction of wants, is under a single control. In proportion to the advance of integration in an industry production for sale, for a market, disappears from the intermediate stages. At the final stage the work is very often done to order—war material, municipal electric light installations, railway material, etc.—or for supplying the immediate wants of the consumer, but at every intermediate stage production is carried on at the order of the succeeding stage. In these circumstances competition has no effect in regulating production except in the final stage. Here it is always important. When contracts are offered by public authorities or large companies, there is frequently a very keen competition between large concerns that are in a position to undertake the work. Sometimes, in fact, the price is reduced below the actual cost-price. To prevent this, or to make additional profit where possible, the concerns interested often make more or less secret agreements, for the purpose of sharing custom or profit.

Even when competition between different concerns is entirely abolished in a trade, the fixing of prices is not quite arbitrary. It is still necessary to compete with other means of satisfying the same want. The electric light industry, for instance, is in constant competition with concerns that supply illumination in other forms—oil or gas, for example. This competition compels firms to keep prices as low as possible and helps to maintain the principle of cost as a whole. Even if there were no rival methods of meeting the same want, the producer has always to bear in mind that he has to compete with the producers who propose to satisfy other wants. The consumer's distribution of his means amongst the various ways of satisfying his wants depends upon the prices of things, and there is, therefore, always a struggle amongst all the producers for the money of the consumers.

According to the classical theory even wages are fixed by free competition of the workers on the labour market. This competition was supposed to be realised by removing every obstacle to the worker's freedom of movement. The modern community, however, uses highly developed organisations, both of workers and employers, to regulate wages. There is almost no free competition. The perfect trade-union has a monopoly of labour within a particular trade, but is normally open to all skilled work in that branch. The monopoly cannot then be used arbitrarily for raising wages, because, though the union has no competition in its own trade, it has to face the competition of other industries that meet the same want, and it has its share always in the general struggle for the money of consumers. The wage, consequently, cannot be put so high as to endanger the demand and therefore the employment of its workers. In so far as the characteristic policy of the union brings about uniformity of wages and other labour conditions for work of the same sort and quality, the regulation of the wage under modern forms of organisation is based upon the principle of scarcity. There are, of course, exceptions to this rule. Attempts are made, for instance, to curtail artificially the quantity of work done, and thus raise wages above the level which the principle of scarcity assigns. But these attempts are always resisted, and they are regarded as excesses on the part of the labour movement.

This brief survey of the actual forms of the modern economic life will suffice to enable us to reach the following result. Free competition does not, as the theory supposes, guarantee that prices shall be fixed according to the principle of cost. Nor can it be said that free competition governs the modern exchange-economy. In large and important spheres of our economic life recent developments have entirely abolished it. Competition still plays a very important part in modern economic life, but the forms it assumes are totally different from the ideal of *free* competition. The very idea of free competition is obscure. The negative definition of it, as the absence of any regulation or organisation, excludes the essential condition on which the modern community succeeds in certain spheres in creating a competition that helps us to realise the principle of cost. It would be very difficult to give a satisfactory positive definition of free competition. The idea of it is, in fact, quite irreconcilable with a matter of great importance in the modern economic life—the economic superiority of the large business. In cases where this superiority makes itself felt, free competition is logically bound to bring about its own opposite—monopoly; for, at what intermediate stage would the assumed superiority of the large business permit a state of equilibrium under free competition? Such an issue cannot be prevented without forms of organisation acting on conomic life in a severely regulatory fashion, which would therefore mean the end of free competition in the cases we are considering.

In view of all this it should be clear that to take free competition as the starting-point for a general theory of prices is of very little use. If we apply to the fundamental assumption of our theory the strict scientific condition that it shall not unnecessarily restrict the sphere of application of the theory, but shall really be a necessary assumption, it is still clearer that we cannot make free competition the starting-point of it. For there is no doubt whatever that even without free competition prices can be fixed in accordance with the cost principle. Indeed we shall see in the next section that such pricing would have to be maintained in a community that rejected private enterprise and therefore excluded free competition. But even our actual society succeeds, as we saw, in many cases where free competition is impossible, in fixing approximately normal prices in other ways.

The question to what extent the fixing of prices is controlled in our actual economy by the principle of cost may now be answered by stating that the principle represents, in a measure, a normal condition about which actual pricing oscillates. Any material deviation from the principle of cost provokes, as a rule, counteracting forces. Competition between a few relatively large concerns, which might easily bring down prices below cost, is avoided by industrial combinations of various kinds. The primary impulse in the whole concentrating movement which characterises our time is unquestionably a desire for protection against disastrous, in the long run ruinous, competition, and to secure prices that will cover the costs. It is true that trusts and individual concerns which have secured a monopoly use it to fix prices that mean an abnormally large profit to themselves. These attempts, however, generally provoke strong reactions, either in the form of competition in the same trade or in a trade that meets the same want in a different way, or in the form of various protective measures on the part of the community in the sphere of legislation, commercial policy, railway rates, tariffs, etc. These reactions show that pricing in accordance with the principle of cost is to be regarded as the normal procedure; and it is generally so regarded. In the same way the organised efforts of the workers are mainly due to the urgent need of some protection against a pressure on wages which is irreconcilable with sound principles of pricing, and the attempts of labour organisations to raise wages above the level assigned by normal pricing are strongly resisted. By drawing up maximum rates in granting concessions to railways, electricity works, gasworks, etc., by inviting competition in various ways, by the organisation of markets, and so on, public bodies try to keep prices as far as possible in agreement with the principle of cost. The co-operation of consumers, also, in an effort to secure as direct a relation as possible between producer and consumer, helps to realise this principle. The business world, again, recognises the principle of cost as regulative; as is clear, amongst other things, from the general demand that enterprises which are permanently unable to cover the real cost of production shall put themselves in a position to do so by cancelling a sufficient amount of their capital—a demand which is, moreover, only a consequence of the general rule, in harmony with the principle of scarcity, that existing durable goods are valued merely according to their returns (compare § 22).

Hence, although, on account of the great mobility of modern economic life, prices can never be fixed in strict conformity with the principle of cost, this principle generally indicates the state of equilibrium about which the actual prices oscillate, and it is regarded as the normal condition of the exchange economy and considered to be desirable. If we would have a preliminary general idea of our existing exchange economy, showing its essential features, it is clearly best to study the fixing of prices on the basis of the principle of cost, in agreement with the principle of scarcity and the supplementary principles of pricing. As these principles merely represent consequences of the general economic principle for the exchange economy, the study of this process of pricing in any economy should enable us to learn the essential processes of the general exchange economy.

There is no doubt that all economic theory is directed to the study of this process of pricing. And if we take normal pricing as the subject of our inquiries, we should, as we have seen, not do well in making free competition our starting-point. It is sounder, and certainly more natural, to direct our inquiry immediately to the normal process of fixing prices.

§ 15. The Socialist Community.

The principles of pricing are, as we have shown (§§ 11–13), merely consequences for the exchange economy of the general economic principle. We have taken the exchange economy in the widest sense, stipulating only that it shall allow the individual freedom to choose employment and freedom of consumption within his means. It follows that the principles of pricing hold good for every exchange economy, and are independent of the particular organisation of production within the economy. In this respect our actual economy is characterised by the predominance of private enterprise and private ownership of the material means of production. These features have, it is true, a great influence on the distribution of income, and consequently on the demand for different goods and the direction of social production. They are, therefore, in the long run, of a certain significance in the actual fixing of prices; but they do not affect the validity of the principles of pricing. These principles would remain unchanged in any community which took over the control of production and reserved to itself the ownership of the material means of production.

Such a community we call " Socialistic." The name indicates a self-contained exchange economy in which the entire production is conducted by and for the community itself through officials appointed for the purpose, and all the material means of production are the property of the community; but in which there is still freedom of work and consumption to the extent to which it is essential to an exchange economy. This definition does not, of course, apply to every economic order that has been described as " Socialist." It represents the theoretically simplest Socialist economy, a pure type. The others are variations, often rather vague intermediate forms between this and an economic order which, like our actual order, leaves production to a number of different economic units which work for their own interests.

The study of pricing in a typically Socialistic economic order is from various points of view useful and profitable in theoretical economics. It shows very clearly, in the first place, how untrue it is that free competition is a theoretically necessary condition of realising the principle of cost, and how generally important the principle of cost is in the exchange economy. Secondly, the study of pricing in a Socialist economy is useful because such an economy may theoretically be regarded as the simplest, and therefore many features which are rather complicated in the actual form of our exchange economy can be more easily studied and dissected in the Socialist form. Thirdly, comparing the actual order with the Socialist ideal enables us to test the necessity of our actual economic processes and institutions. Fourthly, the study of pricing on Socialist lines enables us to correct the unsound ideas as to the possible substance of a Socialist economy which have been so richly nourished by unbridled imagination and political oratory.

We are not going to consider the practical possibility of realising the Socialist ideal, still less the question of its desirability. We are concerned only with price-fixing and the distribution entailed by this of the productive forces amongst the various branches of production in what we theoretically take to be a typical Socialist economy.

How are we to conceive an economic order of this kind? Collective wants must, of course, be collectively met by the Socialist community itself by means of certain organs. There is, moreover, no reason why the Socialist community should extend the gratis principle; that economic principle belongs to Communism, not Socialism. If we want to study a typically Socialist economic order, we must distinguish it as sharply as possible from the Communist order, though this is rarely done in political discussion. The Socialistic economy must be based essentially on the free exchange of personal acts and means of satisfying personal wants. It is then in substance an exchange economy, and, if the general requirement of economic conduct is fulfilled, it is also an economy governed by the principle of cost.

The Socialist economy is also, like every advanced exchange system, a monetary economy. It is true that there has been much talk of the Socialist system dispensing with money. Many of the older Socialists, such as Robert Owen, made the exclusion of money one of the main points of their program. But the idea is based upon a misunderstanding as to the nature of money, a failure to grasp what is essential to it. As we have shown (§ 7), money is primarily a scale of reckoning in which the exchange economy expresses prices. Even Socialism must use some such scale of reckoning, if it recognises the fundamental principle of the exchange economy. Some Socialists, and not the least clear-headed of them, have imagined that reckoning in money ought to be replaced by reckoning in " hours of work." But changing the name does not alter the nature of the matter. Reckoning in hours of work is the same thing as in money. It is generally proposed by Socialists that coupons or tickets should be given for the hours worked, and these would buy commodities at prices reckoned in hours of labour. But these coupons, which would certainly be needed in some form or other, are clearly a medium of payment, and in this sense they play the part of material money. Hence the Socialist system is a completely developed monetary economy.

It is, of course, not necessary that the abstract unit of reckoning in the money-scale of the Socialist economy should be a real work-hour. As all work-hours cannot be equally valued, it must be an ideal or " normal " hour's work. The work must be measured in so many " normal work-hours " per hour's work actually performed, or performed according to the quantity of the article produced or calculated in some other way. All prices of the commodities and services that are provided for its members by the Socialist community must be calculated in these normal hours of work. As the members of the commonwealth have no income from the ownership of material means of production, work represents the entire income of the individual. Within the limits of this income the individual is perfectly free to satisfy his wants according to existing prices.

In the circumstances it follows, for precisely the same reasons as we gave above in connection with pricing in the general exchange economy, that the Socialist system is bound to calculate the prices of all goods supplied to consumers primarily according to the principle of scarcity. The system has no other method of adjusting the demand for an article to the available supply of it except to put on the article a sufficiently high price to effect this. This pricing must clearly extend to the whole of the bookkeeping of the system and include the whole of its production. The prices of the means of production themselves will have to be settled primarily by the principle of scarcity. The demand of consumers is indirectly a demand for means of production, and it can only be restricted by putting a suitable price on them. Hence the principle of scarcity is just the same for the Socialist as for the existing economy; indeed, in a balanced and rationally conducted Socialist system it would have to be maintained much more perfectly than is possible in our actual economic system. It is clear from what we have said that the supplementary principles of pricing also are the same for the Socialist as for the existing system.

What we have said about pricing in general in the Socialist economy applies especially to work. The price for every variety of work must be high enough to restrict the demand. As long as the community recognises the right of the individual worker to the economic return on his work, the wage must be equal to the price of his production. It is generally emphasised by Socialists that their economy will put an end to the wage-system; and this must mean that a worker's wage is determined by some objective factors other than the state of the market at the time. We see that this is wrong. Wages in a rationally conducted Socialist economy are bound to be in harmony with the state of the labour market: which means that they are determined by pricing in accordance with the principle of scarcity and the supplementary principles. To what extent Socialism would control the state of the market itself by other measures is a different question. We shall see later (§ 38) that this is possible to some extent both in the Socialist and the actual order by proper education. If Socialism would go beyond this, and attempt to regulate the labour market by restricting the individual's choice of a profession or right to emigrate, or by controlling births, etc., in order to create a market which would permit a scale of wages that would be regarded as suitable on "objective" grounds (without respect to the state of the market), it would be possible to some extent—though only to some extent (for Socialism could not get over the natural scantiness of certain personal endowments)—but it would be an infringement of the individual's control of his own labour and of his personal freedom that would bring the Socialist economy very near to being a slave-economy, and would, at all events, deprive it of the essential features of an exchange economy.

In what follows we shall have many opportunities to test the necessity of economic processes by examining the conditions of the Socialist economy we have analysed, and in many cases we shall reach conclusions opposed to generally accepted ideas.

CHAPTER IV

THE MECHANISM OF PRICING

§ 16. Arithmetical Treatment of the Problem of Equilibrium.

IN the preceding chapter we deduced the principles which govern pricing in every economy as necessary consequences of the general economic principle. If the reader has fully grasped these principles, he will be in a position to form a correct idea of the general nature of pricing, and he has firm ground to stand on in dealing with most of the objects of theoretical economics. The science, however, also includes problems which require a deeper insight into the mechanism of pricing. It is a matter of the much-disputed character of the nexus of causes and effects in the pricing-process, and of a question of great importance in connection with the theory of money with which we will deal later—the degree of definiteness of the problem of fixing prices. In order to elucidate the mechanism of pricing, we have to give in mathematical form the intrinsic nature of the process of fixing prices. This must not be understood as if it were necessary to describe the process in difficult mathematical language beyond the range of any ordinarily educated person. The essential points of the mechanism can be realised by any person who has a general knowledge of a system of equations with several unknown quantities. Hence the mathematical expressions in this section need deter no one from reading it. The work is, however, so arranged that the section may be passed over without breaking the general connectedness. In that case the reader would merely have to be content with a less profound insight into the aforesaid questions.

In agreement with the conclusions of the preceding chapter we have here to consider a self-contained exchange economy in which pricing is entirely governed by the principle of scarcity and the supplementary principles we gave. How that state of things is brought about does not matter as far as our present inquiry is concerned. We know that prices can be fixed in this way in very different organised economies, and, particularly, that our actual economy approximately effects this by using a great diversity of means. In order to simplify the matter as much as possible, we will assume that there is no indefiniteness of the kind mentioned in § 13 with regard to the cost of production; that, therefore, the principle of scarcity suffices entirely for the settlement of prices. The subsequent introduction of the supplementary principles of pricing into the mathematical treatment of the problem of equilibrium does not present any particular difficulties and need not engage our attention here.

First we will consider the simple case, corresponding to § 11, where the influence of production does not enter the question, and the quantities of goods available to the consumer in a definite period are given: which is equivalent to assuming that production is invariable and fixed once for all. These quantities we will call the supply of the goods in question, and will indicate by $S_1, S_2 \ldots S_n$, n being the number of the kinds of articles in question.

We suppose that the consumers are not the same individuals as the producers. When a producer consumes part of his production himself, we regard him in his capacity of consumer as a separate individual. Hence any consumption on the part of the producer is not to be deducted beforehand from the supply, but counted as part of the total supply on the same footing as all other consumption.

We first assume that the sum of money which each consumer pays during the relevant period for the satisfaction of his wants is fixed in advance. In those circumstances the demand of each consumer for various goods during the period is clearly settled as soon as prices are settled.

The connection between the demand and the price of an article is best represented by saying that the price of the article is selected as an independent invariable. If we then vary the price, we can determine how much of the article in question the relevant individual will buy at any particular price, or how the individual demand varies with the price. The result of this inquiry can be shown in a table; or the individual demand—the quantity of the article which the individual in question buys at a given price—can be conceived as a function of the price, the form of this function expressing the subjective valuation.

The advantage of this way of expressing the individual demand is especially seen when one wants to deal with the demand of several individuals together. We then have a common independent variable, the price, and for every value of this variable we know the demand of each individual consumer. Each such demand is represented by a figure which expresses how many units of the article the consumer in question wishes to buy. Consequently these figures can be added together, and we get the total demand for the article in question. This also can be put in the form of a table, giving the total quantity of the article that is desired at each particular price; or we may represent this total demand as a function of the price.

But if we look more closely into the demand-function, we shall find that it also contains, as variables, the prices of all the other goods. The demand of the individual consumer for a particular article is, as we have seen (§ 11), not determined until the prices of all articles that can be objects of his demand at all are fixed. It is only when this is done that he has all the data to guide him in regulating his consumption within the limits of his means; until then he is not in a position to fix his demand for any particular article.

With the prices of the *n* goods, therefore, the demand of each individual consumer, and consequently the total demand of the whole of the consumers, for any particular article is settled. If we call the total demand for the n goods during the relevant period $D_1, D_2 \ldots D_n$, we can give these magnitudes as functions of the n prices, thus:

$$
\begin{aligned}
(1)\quad D_1 &= F_1(p_1 \ldots p_n)\\
D_2 &= F_2(p_1 \ldots p_n)\\
&\cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot\\
D_n &= F_n(p_1 \ldots p_n)
\end{aligned}
$$

$p_1 \ldots p_n$ being the prices of the n goods.

But in the equilibrium of the economy the demand for each individual article must be in harmony with the supply of it, as the fixing of prices in accordance with the principle of scarcity has to restrict the demand until it can be met out of the available supply of commodities. Consequently:

$$D_1 = S_1,\ D_2 = S_2 \ldots D_n = S_n$$

and so according to (1):

$$
\begin{aligned}
(2)\quad F_1(p_1 \ldots p_n) &= S_1\\
F_2(p_1 \ldots p_n) &= S_2\\
\cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot\ \cdot&\\
F_n(p_1 \ldots p_n) &= S_n
\end{aligned}
$$

Hence to solve the pricing problem in the simple case we are considering, we have only to regard the n prices as the unknown quantities of the problem, and take them as given in the usual mathematical way. We are then in a position to express the demand for the n goods in these prices according to equations (1), and equations (2) then follow as a consequence of the principle of scarcity. This system contains n equations for the determination of n unknown prices; which is generally sufficient to determine the n unknown quantities. Once the prices are known, the demand of each individual consumer and the total demand for each particular commodity can be calculated. As the demand is satisfied at the prices calculated in this way, the whole problem of the distribution of the commodities available to consumers is solved.

That the problem of pricing cannot be treated separately for each article is due, as we see, to the fact that the demand for an article depends not only upon the price of that article but upon the prices of all other articles as well. It is this fact which makes it necessary to express the pricing process by a system of simultaneous equations like our system (2). The intrinsic nature of the pricing process cannot be adequately represented in any other way.

We have here taken the supply for granted; that is to say, we have assumed that during the period in question the articles are available, or will be provided by production, in constant quantities fixed in advance. Now let us drop this assumption, and introduce the whole production into the pricing problem. As in this section we want to consider only prices determined in accordance with the principle of scarcity, we assume that the cost of production of each article is clearly fixed by the prices of the means of production.

In discussing our present problem we must consider a continuous productive process, and invest with an arithmetical form the conditions of equilibrium of such an economy with constant prices which we gave in § 12. First we will take the simplest case, the stationary economy.

The limitation of the production of new articles is, as we saw in § 3, given by the scarcity of the means of production. Through production the relative scarcity of the satisfaction of wants is referred to the scarcity of the means of production. The general character of the means of production also was indicated in the third section. Here, where we are specially concerned with the mechanism of pricing, we must take the means of production and their quantities for granted. In order to have a concrete substratum of our inquiry, we may take as types of these labour, the raw materials provided by nature, and the services of existing durable goods.

The answer to the question how far these means of production may be regarded as elementary, or are themselves reproducible, must be reserved for the next Book; as must also the complete and final analysis of the means of production. There we shall come to the question how far the elementary means of production, although not reproducible, are nevertheless subject in another way, in respect of the quantities provided, to the influence of the pricing process. Here we must be content simply to take for granted a series of means of production as elementary and available in given quantities. Let r be the number of these means of production and $R_1, R_2 \ldots R_r$ the quantities of them which are available in a given unit-period. This period, which we may also call the "income period" or, if we select a unit of time for the purpose, the "unit period," may, if the productive process is sufficiently uniform (p. 28), be made as short as we choose; it may, according to the nature of the problem in hand, represent a day, a week, or a year.

With the help of these means of production, then, finished goods of n different sorts are produced. To produce the unit-quantity of article 1, it may be necessary to use quantities $a_{11} \ldots a_{1r}$ of the means of production; for the unit-quantity of article 2, the quantities $a_{21} \ldots a_{2r}$ of the same means of production may be required; finally, for the unit-quantity of article n, the quantities $a_{n1} \ldots a_{nr}$. These quantities may be called "technical coefficients." They represent the technical conditions of production. As we have here assumed these conditions to be fixed, the technical coefficients are to be regarded as given magnitudes of the problem. Obviously several a may be equal to zero, as all the means of production are not needed in making each article.

As to the significance of these technical coefficients we need make only the following observation: The making of a unit-quantity of a finished article requires, as a rule, the use of means of production of a whole series of different unit-periods. Production is only completed in the last of these, and the finished article made available for consumption. Our *a* designate primarily the total quantity of the means of production of each particular kind which are required in this way for making the unit-quantity of a finished article. They are as such sums of quantities of means of production of various unit-periods. In the stationary economy, however, production goes on to an invariable extent. Hence the making of an article of a certain sort is repeated in each unit-period. In order that this continuous process of production shall give the unit-quantity of the article in each unit-period, a definite quantity of the means of production must be available in each such period. The demands which the constantly repeated production of the finished article makes upon the means of production of a definite unit-period are summed up, and determine this quantity. It is, therefore, obviously the same as the quantity of the means of production of different unit-periods which is required for making a definite unit-quantity of the article. Our *a* thus designate the quantities of the means of production defined in both the first and the second way.

According to the principle of scarcity the required limitation of the demand must now be secured by uniform prices: that is to say, there must be one price for every single means of production as well as every finished article. We now choose the prices of the various means of production as the unknown quantities of the pricing problem. Let us take these for granted for the moment, and call them $q_1 \ldots q_r$. We can then calculate the price of each of the n finished articles. Indicate these prices by $p_1 \ldots p_n$, and we have:

$$
\begin{aligned}
(3) \quad & a_{11}\,q_1 + a_{12}\,q_2 + \ldots + a_{1r}\,q_r = p_1 \\
& a_{21}\,q_1 + a_{22}\,q_2 + \ldots + a_{2r}\,q_r = p_2 \\
& \ldots\ldots\ldots\ldots\ldots\ldots \\
& a_{n1}\,q_1 + a_{n2}\,q_2 + \ldots + a_{nr}\,q_r = p_n.
\end{aligned}
$$

And once the prices of the finished goods are known it follows from what we have said that the total demand for each article in each unit-period is known, and can be calculated by the use of the following system of equations:

$$
\begin{aligned}
(4)\quad & D_1 = F_1(p_1 \ldots p_n) \\
& D_2 = F_2(p_1 \ldots p_n) \\
& \ldots\ldots\ldots \\
& D_n = F_n(p_1 \ldots p_n)
\end{aligned}
$$

In accordance with the principle of scarcity every demand must, at equilibrium prices, be satisfied by the supply; and we thus get

$$(5)\quad D_1 = S_1, D_2 = S_2 \ldots D_n = S_n$$

in which S_1, S_2, S_n signify the amounts of each of the articles that are produced in the unit-period.

We now know, therefore, the quantities of the various articles that are produced in each unit-period. From these we can deduce as follows the demands that are made upon the means of production of a certain unit-period—let us say the present. To produce permanently in each unit-period a unit of article 1 we need quantities $a_{11} \ldots a_{1r}$ of these means of production. For quantity S_1 we consequently need quantities $a_{11}S_1 \ldots a_{1r}S_1$. It is the same in regard to the other products. In all, therefore, we need for the continuous production of the quantities $S_1 \ldots S_n$:

Of means of producton 1 the quantity $a_{11}S_1 + a_{21}S_2 + \ldots + a_{n1}S_n$ (6)
Of means of production 2 the quantity $a_{12}S_2 + a_{22}S_2 + \ldots + a_{n2}S_n$

. . . .

Of means of production r the quantity $a_{1r}S_1 + a_{2r}S_2 + \ldots + a_{nr}S_n$.

These quantities represent in the continuous stationary economy the indirect demand of consumption for the means of production needed in each unit-period. In accordance with the principle of scarcity this demand for each means of production must be equal to the quantity of this means of production available within the unit-period considered, since it is the object of pricing to restrict the demand just as much as is necessary for this purpose. Hence:

$$
\begin{aligned}
(7)\quad \mathrm{R}_1 &= a_{11}\mathrm{S}_1 + a_{21}\mathrm{S}_2 + \;.\;.\;.\; + a_{n1}\mathrm{S}_n \\
\mathrm{R}_2 &= a_{12}\mathrm{S}_1 + a_{22}\mathrm{S}_2 + \;.\;.\;.\; + a_{n2}\mathrm{S}_n \\
&.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;.\;\;. \\
\mathrm{R}_r &= a_{1r}\mathrm{S}_1 + a_{2r}\mathrm{S}_2 + \;.\;.\;.\; + a_{nr}\mathrm{S}_n.
\end{aligned}
$$

Here the S are, in virtue of equation-systems (5) and (4), functions of p, and therefore, in virtue of equation-system (3), functions of q. The system of equations (7) thus contains as unknown quantities the r prices of the means of production. There are also r equations, and the system therefore suffices generally to determine the unknown quantities. Once the prices of the means of production are known, we can calculate the prices of the finished articles in virtue of equation-system (3). This gives also, by means of equation-system (4), the demand in each unit-period for each of the finished articles. We can, therefore, calculate the demands that will be made upon production. Equations (5) show how much of each article should be produced in each unit-period, which settles the distribution of the means of production amongst the various branches of production. The claims which the continuous demand, regulated by these prices, makes upon the various means of production existing in a definite unit-period are to be calculated according to formulæ (6). The adjustment of these demands to the available quantity of means of production is guaranteed by equation system (7). Thus the pricing problem is entirely solved for the case we are considering here.

Our equations show the real nature of the pricing process which cannot be exactly represented in any simpler form. The demand for a finished article is an attempt to attract certain means of production to a particular use. This is, however, opposed by similar attempts in the shape of the demand for the other finished goods. We thus get a struggle for the relatively scarce means of production: in the exchange economy this struggle is settled by fixing uniform prices for the means of production; these in turn fix the prices of the products, and are thus a means of restricting the demand. The demand for a certain means of production caused by a steady demand for each particular product is summed up for each unit-period in a total demand for this means of production which is represented by the right side of equation-system (7), and, in a state of equilibrium, must be equal to the given quantity of the means of production. An equation of this kind must apply to each means of production.

There has been a good deal of controversy as to what the determining factors of the prices are. We can now answer this question. They are the different given coefficients of our equations. These coefficients may be distributed in two chief groups, which we may call the objective and the subjective determining factors of prices. The objective factors are the quantities of the means of production (R) and what we may call the technical coefficients (a). The subjective factors are the coefficients of equations (4), which represent the dependence of the demand upon prices. All these factors are essential in the settlement of prices. Hence an "objective" or "subjective" theory of value, as a theory that would trace prices to objective or subjective factors alone, is nonsense. The whole controversy between these theories of value, which has occupied such a disproportionately large place in economic literature, is mere waste of time.

Equation-system (7) expresses the fact that the indirect demand of the continuous consumption for the various means of production in each period must be covered by quantities of these means available in that period, and that the prices must be high enough to regulate the demand in harmony with this condition. We may say, therefore, that prices are determined by the scarcity of the means of production in proportion to the indirect demand of consumers for them. The scarcity of the means of production, in accordance with our assumptions, is a given factor of the problem. The demand, on the other hand, is itself a function of the prices of finished goods, and consequently, in virtue of equation-system (3), a function of the prices of the means of production, and therefore cannot be a determining factor of them. What is on this side a given factor of the problem of prices is the way in which the demand-functions depend upon the prices of the means of production; that is to say, the form of these functions or the aggregate of their coefficients, which characterise the nature of the demand for the means of production. When we thus give the scarcity of the means of production and the character of the demand for them as the two determining factors of prices, it is clear at once that there can be no question of a priority of one or the other factor. They are both, in the full sense of the word, essential determining factors of prices.

This solution of the pricing problem is so far general that it includes the case, previously considered, where the articles which are the direct object of demand are not reproducible at will, but given in fixed quantities. Indeed these articles are on a level with the means of production only in our general solution of the problem. That a thing is reproducible means only that its scarcity can be ascribed to the absolute scarcity of other non-reproducible things. These absolutely scarce things we call elementary means of production. Hence the solution of the pricing problem is uniform for all classes of goods. The attempts that are sometimes made to frame different theories of prices for reproducible and non-reproducible goods are superfluous and misleading.

We have reduced the pricing problem to factors which for the moment we may regard as given factors of the problem. Frequently, however, we find writers indicating as determining factors of prices certain things which are, as a matter of fact, variables of the problem just as much as the prices themselves, and can only be determined by the given factors we have described. We have already shown that the demand is a variable of that kind. How far each separate demand either for the means of production or the finished articles can be satisfied, and therefore which is the marginal purchaser, or which the last want to be satisfied, and therefore how great the "marginal utility" is, are questions that can only be answered in connection with the determination of prices by means of our systems of equations. Hence, what is called the marginal utility is in just the same position as the price as an unknown quantity of the problem; and it is, therefore, absurd to quote the "marginal utility" as an explanatory factor of the price.

Much the same as we have said about the demand may be said also of the "cost of production" of the finished articles, which is sometimes given as an independent determining factor of the price. The cost of production of our goods is given by our equation-system (3), and is therefore not known until the prices of the means of production, which are the unknown quantities of the problem, are fixed. When the "technical cost of production" is quoted as a co-determining factor of price, we must understand by this merely the "technical coefficients" a. Cost is, as we have said (§ 12), essentially an economic conception, chiefly originating from the fact that demand must, in consequence of the scarcity of the means of satisfying wants, be restricted by prices.

The cost of production of a commodity is not an isolated phenomenon, as it is sometimes represented. The means of production that are used in making an article can as a rule be used also for making other articles, and are, as regards the consumption of these articles, the object of a demand that emphasises their relative scarcity. The prices of these means of production, and therefore the cost of production of the first article, depend upon this demand. For instance, as long as the waterfalls of Scandinavia were used only for producing mechanical power, chiefly for the timber and iron industries, the natural water-horse-power was very cheap in many places, if not valueless, and the industries which used such hardly needed, as a rule, to reckon it, in its natural state, amongst the costs of production. Now that there is a demand for water-power for producing electrical energy, it has in many cases raised the price of natural water-power; and this has to be taken into account in calculating the cost of production in the timber and iron industries.

This dependence of the cost of the production of an article upon the demand for other articles is the counterpart of the dependence of the demand for an article upon the prices of other articles to which we referred previously. This reciprocal dependence of the unknown quantities of the pricing problem is, as we saw previously in the simple case in which there is no question of production, what makes any isolated treatment of the pricing problem for a single article impossible; shows that the problem is essentially one, extending to the whole of the exchange economy; and gives the process of pricing an intrinsic consistency that can only be reproduced by a system of simultaneous equations.

Hitherto we have assumed that the sum of money which each consumer pays for the satisfaction of his wants in the unit-period is fixed in advance. On this assumption it is clearly enough to know the prices of finished goods to determine the demand of each consumer for these goods. The total demand for the various goods can then be calculated by the aid of our equation-system (4). When, in fine, the prices are calculated by means of equation-system (7) they are settled relatively to the total money payments of the consumers which we have taken for granted. From this we may deduce that the prices are determined absolutely, not merely relatively to each other, by equation-system (7).

The assumption that the money payments of the consumers to buy finished articles for the satisfaction of their wants are settled in advance must now be dropped. The money payments of a consumer are essentially determined by his income. This is the general case, at all events, if payments and income are taken over a long period. The payments need not be equal to the income in every period. The consumer may save part of his income. In certain cases he may, on the other hand, spend more than his income, by borrowing money for purposes of consumption or leaving his bills unpaid for a time. Both saving and consumption beyond one's income may be influenced by current prices. If, however, all prices are fixed, we must assume that the amount of all payments of each consumer and the distribution of them amongst the various classes of goods are determined by his income. In the stationary economy these payments are constant, and as there is, on the whole, no saving in such an economy equal to the income. For the sake of simplicity we may assume the same in regard to each individual economy. The income of the individual, however, is determined by the prices of the means of production which he sells in the course of the productive process. The various incomes of the members of the exchange economy are thus determined by the pricing process, and neither these incomes nor the payments made in virtue of them should be regarded as quantities of the pricing problem given in advance. It is only when we take the income also as one of the unknown quantities of the pricing problem that we are in a position to deal with the problem in a way that reflects the exchange economy, shows the consumers to be at the same time producers, and enables us to see how much of the articles produced the individual producer is in a position to acquire in exchange for his productive activity. The pricing problem in this generalised form contains in itself the problem of economic distribution. Hence the problem of distribution is not an independent problem of economic science, but must be regarded essentially as a special aspect of the general problem of prices. The solution of the problem of distribution is from this point of view included in our system of simultaneous equations. This, of course, does not mean that the practical problem of distribution cannot be regarded from other points of view; indeed, it must be (compare § 19). The character of economic distribution is always determined by the prices fixed by our system of equations for the means of production co-operating in the social process of production, and the shares of the various economic subjects in the outcome of social production are thus essentially determined by the relative scarcity of those means of production which are at their disposal. It is only the study of pricing conceived in these general terms that can give us a complete and harmonious picture of the processes within the exchange economy.

Our new assumptions make no change in the outward form of the systems of equations which serve to determine prices. But the content of equations (4) is altered. Previously these equations expressed the dependence of the demand upon the prices of commodities, on the assumption that the total payments of the consumers were given. Now we have to start from the prices of the means of production, which are provisionally taken as known, and with the aid of these calculate the incomes of the various individual economies. On our assumption these incomes, taken in conjunction with the prices of commodities, which also are calculated from the prices of the means of production, determine the total payments for consumption of the individual economy, so that we can give equations (4) in the same way as before. But they no longer include the total payments, which we previously took for granted, as constants. Now, however, we have the coefficients of the functions $F_1 \ldots F_n$ as functions of the prices of the means of production. But the variables $p_1 \ldots p_n$ are themselves, in accordance with equation-system (3), functions of the unknown quantities $q_1 \ldots q_r$. Hence functions $F_1 \ldots F_n$ now contain, besides the variables $q_1 \ldots q_r$, only constants which must be regarded as given in our problem, and represent the dependence of the demand upon prices and upon the distribution of income determined by these prices.

Up to the present we have conducted our analysis on the assumption of a stationary economy. Now we have also to consider the evenly progressive economy. In that the quantities of the means of production that are available in any unit-period (our $R_1 \ldots R_r$) are constantly increasing. The ratio of this increase, and of the even progress of the economy generally, we will designate c. If for the moment we take the prices of the means of production as given, the money incomes which are derived from the sale of these means of production, and therefore increase in the same ratio c, are determined. Part of this income is spared: the rest is used for buying finished articles. In the evenly progressive economy, however, the degree of saving is constant, and the sums of money which are available for consumption in every period increase in the ratio c. With the help of the technical coefficients a the prices of finished articles are determined by equations (3) in the same way as in the previous case. As these prices remain constant, the demand, with its steadily increasing purchasing power, can be satisfied to an increasing extent. Hence in the evenly progressive economy we must assume that our $D_1 \ldots D_n$ all increase in the fixed ratio c. That must then also apply to our $S_1 \ldots S_n$.

However, the continuous production of these steadily increasing quantities of things makes demands upon the means of production $R_1 \ldots R_n$ that are available in a given unit-period. Our equations (7) remain unchanged, but the coefficients a must be replaced by others. As we have already said, the a are sums of other constants which show how much of them refers to each unit-period; that is to say, how much of each means of production is required in each unit-period for the production of a definite unit-quantity of each of our finished goods. As production is now supposed to increase uniformly, these unit-quantities must be replaced by quantities constantly increasing in the ratio c; therefore the corresponding constants also increase in the same ratio—that is to say, they must, if we consider a series of successive unit-periods, be multiplied by successive powers of the ratio of progress. The constants thus determined must be added to sums which have to replace our a in equations (7).

The essential thing is, however, that these new coefficients contain, besides the elements of our old "technical coefficients," only the ratio of progress c, and they are therefore to be regarded as given quantities in the present pricing problem, if the prices of the means of production are taken as known. Thus equation system (7) substantially preserves its character, and it suffices, as in the previous case, to determine the prices of the means of production, so that the whole problem of pricing is solved.

The demands which a steadily increasing production makes upon the means of production of a present unit-period are, of course, greater than the demands which a stationary production, corresponding to the present supply of finished articles, would make. The income of the present unit-period, determined by the prices of the means of production, exceeds in the same proportion the total value of the available finished articles in that period. Hence the income falls into two parts, one of which is used for the purchase of finished articles, the other to buy the increase of real capital in the period in question. The first part serves to pay for those means of production which are required for the production of finished goods, including maintenance of the existing real capital; the second part to pay for the other means of production, which are devoted to the augmentation of real capital. The ratio of the two parts determines the degree of saving and the ratio of progress c. The specific significance of the rate of interest in this connection must be reserved for later consideration (§ 25).

It is easy to see that the functions $F_1 \ldots F_n$ must be of the same form, and that they will remain unchanged if all the q, expressed in the monetary unit, are multiplied by any multiplier whatever; because, in an economy that is in a state of constant equilibrium, the demand can only be fixed by the relative prices. The same equilibrium could just as well be maintained if, let us say, the prices were doubled, as the income would then be twice as great; and the distribution of the income amongst the various ways of satisfying wants can only depend, when there is permanent equilibrium, upon the ratio of prices of goods and income, not upon the absolute figures themselves. That the result would be different in the transition-stage to higher prices, since regard for other prices than those of the moment enters the matter, we shall have to bear in mind in our theory of money (§§ 49-51).

We can see in other ways also that the functions $F_1 \ldots F_n$ must have this property. It is well known that in modern physics calculation of the dimensions of the various magnitudes discussed in the science is very important. Theoretical economics can make use of the same method. Price, reckoned in money, is one of the fundamental economic dimensions: it may be called the dimension of value. Now, as the demand for a particular good is expressed by the number of desired units of the commodity, it may be a length (so many yards of cloth, for instance), or a weight (so many pounds of sugar), and so on. But it clearly does not contain the dimension of value: in regard to value its dimension is zero. This is equivalent to saying that a multiplication of all the prices q, expressed in the monetary unit, which now alone represent the dimension of value in the demand-functions F_1, by one and the same factor, does not affect these functions.

The multiplication of all the prices q, expressed in the monetary unit, by any factor whatever, has, therefore, no influence upon equations (5) and (7). As the latter system, which determines the prices q, has this property, it must also be realised by a system of prices q, in which all the q, expressed in the monetary unit, are multiplied by any factor we please. Hence our equation-system is indeterminate in the sense that it determines the said prices only up to a multiplicative factor—or, as it is popularly expressed, determines only the relative, not the absolute, prices. To get the absolute prices a new condition must be introduced: for instance, the price of a commodity or of a group of commodities must be given. There was this condition as long as we took for granted the total payments of the consumer reckoned in money terms. In the general pricing problem a multiplicative factor of all prices remains indeterminate. The determination of this factor, and consequently the final solution of the problem of prices, belongs to the theory of money.

§ 17. The Range of the Results Obtained.

The question, Which are the determining factors of prices? has now been answered in principle by the study we have made. They are partly subjective and partly objective. The subjective factors of prices lie in the character of the dependence of the demand for finished products upon prices. The objective factors are, if we need pay attention only to the principle of scarcity, the technical conditions of production and the quantities of the available means of production. In cases in which the supplementary principles of pricing also apply these factors are partly modified and replaced by others. The differential principle, for instance, introduces the nature of the dependence of the technical conditions of production upon the extent of production: the principle of substitution, the nature of the connection between the quantities of the means of production, which may partly replace each other, as objective factors of pricing.

We call these three groups of determining factors of prices their immediate determinants. Up to the present in our treatment of the pricing problem we have regarded these as given factors. But these factors depend themselves upon a number of different factors of the economic and general human life. If we want to study the influence of these on prices, we have first to study their influence on the immediate determinants. It is only through these that more remote factors can affect prices. Hence all such inquiries bring us back to our solution of the pricing problem. The causal link which connects prices with their immediate determinants, the intrinsic nature of which we have now learned, remains always the most intimate and the central explanation of the problem.

Factors which thus influence prices from without are for instance, changes in the size of the population or its composition as regards age, sex, civil status, classes, and occupations, migration within the economic area in question, changes in the economic organisation, the economic customs of the people (in regard to saving, for instance), in the general conception of the requirements of one's position or of the standard of human life, the destruction of things by war, the exhaustion of natural resources or discoveries of new sources and opening-up of new regions, and finally, new technical progress—in a word, all the factors which give the economic life its mobility and vitality. In so far as these movements affect prices, and are in turn influenced by them, we have to deal with dynamic problems of pricing. These dynamic problems have, of course, a considerably larger content than the static problem of prices, in which the immediate determinants of prices are taken for granted, and in which all we have to do is to explain how they determine prices and the direction of production in a state of equilibrium. It would, however, be a mistake to imagine that solving the static problem has nothing to do with the dynamic problems. On the contrary, all questions of dynamical pricing are converted first into questions as to the effect of certain movements and changes upon the immediate determining factors of prices, and consequently as to the determination of prices by these factors in accord with the causal series already described. It is true that frequently the conditions of our solution of the pricing problem are not realised, if economic changes occur violently. In such case there may be a period when, for instance, goods that were produced at the old cost have to be sold at the new and lower prices, and so the principle of cost is not carried out. But as soon as this transitional stage is over, the fixing of prices in any system that meets in some degree the requirements of sound economy will follow approximately the principle of cost, and will therefore be elucidated substantially by our solution of the pricing problem. This solution is also very important in connection with the whole of the dynamical problems of theoretical economics. We must bear in mind, however, that the conditions of a period of transition considerably affect the conditions of the subsequent normal settlement of prices; they may, for instance, permanently alter the constitution of the population, or the quality of the labour of certain groups of the population.

In our analysis of the pricing process we have so far taken for granted the quantities of the available elementary means of production—that is to say, we have assumed them to be determined by extrinsic circumstances, and therefore objective factors independent of the pricing process. This assumption is only justified in a first survey of the problem. As a matter of fact, it is, in any case, only approximate, and only realised within certain limits of the fluctuations of prices. The prices of the means of production have an actual influence upon the supply of them to the community. It may in normal conditions be latent, but in other circumstances it may be very active. On this point, therefore, the analysis must be carried further.

It is part of the definition of the elementary means of production that they cannot be produced, and therefore cannot be augmented by production. Hence we have to find to what extent what are usually called elementary means of production really meet this strict requirement, or are capable of being augmented by some activity which must be regarded as production. On the other hand, the supply of a means of production may conceivably depend upon the price, even when there is no possibility of producing it. We have then to find out the nature of this dependence.

When we drop the assumption that the means of production are available in fixed quantities, our idea of scarcity is changed to some extent. The scarcity of a means of production is then no longer conditioned by an invariable quantity of it, but is due rather to the way in which the quantity offered depends upon the price, and it makes itself felt in the slowness with which the increase of the means of production follows a rise of the price. This somewhat complicates the pricing problem, but it is of no great importance in the theoretical treatment of it. The fixing of prices on the above more general assumption can be dealt with entirely within the limits of our analysis of the mechanism of pricing. The dependence of the supply of the means of production upon their prices is really only the counterpart of the dependence of the demand for the finished products upon their prices, which we have already considered. It therefore offers no new difficulty to our conception of the general mechanism of pricing.

Naturally, however, the way in which the supply of various chief categories of the means of production depends upon the prices of them must be made the subject of a special study. And as, on the other hand, the quantities of the available means of production are bound to influence their prices, we have the task of investigating the reciprocal action of the quantities and prices of the means of production. As in a state of equilibrium the prices of the means of production must always be such that the demand for them is adjusted to the available supplies, the influence of the quantities upon the prices is clearly ascertained as soon as the influence of prices on the demand is known. Hence the task we now confront may be formulated as follows: we have to study the effect of the prices of the means of production upon the supply of and demand for them.

To this work, a central task of theoretical economics, the next Book will be devoted.

SECOND BOOK

THE PRICING OF THE FACTORS OF PRODUCTION

CHAPTER V

INTRODUCTION

§ 18. The Factors of Production and the Function of Enterprise.

WHEN we want to make a careful study of the pricing of the means of production, it is obviously necessary to distribute them in a few large groups, and in doing so we must be guided by the different positions of the means of production in the process of price-fixing. It has long been the custom to distinguish three principal categories: *labour*, *land*, *and capital.* It has often been said in recent times that this division is mainly based upon the particular social conditions of England at the height of classical economics, and can, therefore, claim no general significance. It must, however, be admitted that the division harmonises best with the requirements of the theory of pricing, as will be seen later, and is consequently quite entitled to keep its place in theoretical economics. It is only necessary, as was pointed out in § 3, and will be shown more clearly in the seventh chapter, to add the independent category of " natural materials " to the category " land." Each of these categories has its special characteristics as a factor in the pricing problem, and the analysis of the means of production which is required for the purposes of this Book must be made separately for each of them.

In what follows, we will, for brevity, call these categories the " factors of production."

They are meant to represent the chief types of the elementary means of production. In the following chapters, therefore, we shall have to find to what extent our factors of production are really elementary means of production, or whether, and under what conditions, the supply of them can be augmented by an activity that we are bound to call production. Even where production is impossible, however, the supply of a factor of production need not—as we assumed in the First Book—be a given quantity of the pricing problem independent of the price of it. The supply may, when it implies some action on the part of the economic man, vary with the price offered for this action. We must carefully study the nature of this dependence. The characteristics of the different factors of production are seen in the two respects we have given; and it follows also that the usual division of the means of production is quite suitable for the purpose of our inquiry.

As long as we take for granted the available quantities of the factors of production, all of them have, as our inquiries in the First Book show, the same position in the pricing problem. This assumption is particularly useful in a thorough study of the pricing problem, because it brings out the essential unity of the problem. Distinction between the different factors is not necessary in connection with the theory of prices until we have to consider more closely the special circumstances which regulate the supply of and demand for them, and particularly the dependence of the supply on the prices of the factors of production themselves.

Prices are paid for the factors of production, in accordance with the general principle of scarcity, because it is necessary to restrict the demand for them until it can be met with the available supplies. The cost of production of an article is from this point of view only an expression of the scarcity of those factors of production which are required to make the article. If we—as we do in this Book—drop the general assumption that the factors of production are given in definite quantities, and so take into account the possibility of a certain dependence of the supply of the elementary means of production upon the prices of them, the nature of the scarcity changes, as we said before (§ 17). It now appears in the form of a certain inertia in the sensitiveness of the demand to a rise of prices. In addition to the fundamental task of prices—to check the demand—we have, in cases where there really is this dependence of the supply upon the price, the task of stimulating the supply. This change, however, does not imply any theoretical change in the mechanism of pricing, as we have already seen. Our general treatment of the pricing problem remains substantially the same; the pricing of the factors of production can be elucidated in respect of all the different cases on common lines within the same scheme. In this treatment of the pricing of the factors of production the principle of scarcity retains the fundamental general significance that is proper to it.

In this program we diverge appreciably from the usual method. Classical economics has reached its highest perfection, and incorporated the most important modern ideas, in the works of Marshall, and it seems advisable to indicate briefly the chief differences between Marshall's procedure and that adopted here. As we have already pointed out (§ 12), Marshall regards as cost, in the real sense, only the "efforts and sacrifices" that are required for production, and as monetary cost of production only the prices which must be paid to elicit the requisite amount of these efforts and sacrifices.*

Of the factors of production labour and capital alone represent the outcome of efforts and sacrifices. Hence these alone can be taken into account in calculating the cost of production. The price of the use of land is excluded by the very definition of cost. With this starting-point the theory of the pricing of the factors of production is bound to assume, on the one hand, that the supply of labour and capital really depends upon the prices that are offered for the relevant efforts and sacrifices, and rises with the prices, and, on the other hand, that "on the margin of production" no price need be paid for the use of land, and that therefore the price of the product at this margin really agrees with the "cost" in the sense indicated—the cost of labour and capital.* This, it is clear, introduces from the first a pronounced dualism into the treatment of the theory of pricing.

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* *Principles*, Book III., ch. v., 2.

The theory of prices which is constructed upon these basic ideas is not to be assailed on the ground that the assumptions do not reflect reality with sufficient accuracy. A theory has always to start from certain simplifying assumptions of only approximate correctness. But we must require of any explanation of the general mechanism of pricing that its soundness shall not depend upon inessential assumptions as to the fixing of prices; and that it shall find room for all the different forms of pricing that occur, or may occur, in real life. This requirement is not met by Marshall's theoretical structure. Even if his assumptions were approximately correct, they are not necessary. We can quite easily conceive a situation in which they are not realised—a situation in which the supply of labour and capital is, within certain limits, independent of the prices of the corresponding efforts and sacrifices; and in which the use of the land has a real scarcity-price undoubtedly affecting the price of the products. An explanation of the mechanism of pricing which breaks down in such a case cannot satisfy our demand for a deeper insight into the essential processes of pricing. When we find that inessential assumptions have essential significance in a theory, we instinctively feel that something essential is lacking; that the theory has not got to the heart of the matter. This essential thing that is lost sight of in Marshall's theory of prices is the principle of scarcity, or the significance of the fixed limitation of the available means of production. The whole of his system is an attempt to dispense with the principle of scarcity, or to reject scarcity as a determining factor of prices. It cannot be denied that the attempt has, in a sense, formally succeeded in Marshall's masterly presentation.

* See, further, Chapter VII.

But it was only possible because, on Marshall's special assumptions, the pricing process is such that the principle of scarcity does not appear externally, although it, naturally, always lies at the root of all the processes of pricing as general regulator. Such treatment of the pricing problem cannot be really satisfactory. The theory must give the principle of scarcity the fundamental position which really belongs to it.*

Our four factors of production are, of course, only types of means of production: the most important means, it is true, yet they must be taken in an extended sense, if they are to represent all the means of production. For instance, labour and wages refer properly to wage-workers who perform manual labour, but they must be extended to industrial and commercial employees, etc. Hence the definitions of the factors need to be further explained and made more precise. This is especially the case as regards "capital," the meaning of which as a factor of production can only be made clear by a thorough analysis. We will, therefore, begin our inquiry with capital and deal with the other factors of production afterwards. It is necessary to follow this arrangement if we are to deal with the theoretical difficulties in a definite order.

The work of directing production in accord with the requirements of consumers falls upon the employers in our economic order. This work is by no means so simple as Socialists imagine when they say that all that is necessary is to draw up statistics of wants in advance and then officially regulate production on the basis of these statistics. That treatment of consumption would, as a matter of fact, be equivalent, in a large degree, to suppressing the freedom of consumers which is characteristic of the exchange economy; because, undoubtedly, the consumers wish most decidedly to keep their freedom to the last moment.

The difficulty of the problem precisely is that the constantly varying demands of consumers, which cannot confidently be determined in advance, must be met despite incessant variations in the methods and conditions of production. This work is actually done—more or less imperfectly, of course—by a number of independent employers, each of whom, on the whole, merely looks to his own interest.

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* Compare § 30.

This solution of the problem is possible because every time a want that is capable of paying is left unsatisfied, or is imperfectly satisfied, or satisfied only at an abnormally high price—every time the problem of the economic direction of social production is not satisfactorily solved—an employer is attracted by the prospect of a special profit to make a better provision for the want in question, and the productive process is steadily improved. The employer intervenes, not only where something is to be done for the immediate satisfaction of the wants of consumers, but everywhere where the productive process, broken up into a thousand separate processes, shows a gap which leaves room for his activity. This unites all the partial processes into a single productive process covering the entire satisfaction of wants in the exchange economy.

The standard by which we can judge what use is to be made of the various means of production is, as has been shown, the price. But the means of production do not flow spontaneously in the direction marked out for them by prices. They must be directed by human action, as is done when the employer buys the co-operation of the means of production, and sells the products of his enterprise. Hence the pricing of the means of production is, as a whole, in the hands of the employers, and is effected by their work.

We have now to describe the position of this work in the productive process and separate it from that of the factors of production. It can best be defined by saying that the employer organises other means of production than his own labour for productive purposes, and sets them to work. The employer is above all things a type for us. This typical employer is the director of the large business in which all the factors of production are used, and on a large scale. This man we may regard as essentially "the employer." It is true that he has, as a rule, a capital of his own devoted to the business. In this respect, however, he is a capitalist, not an employer. He also does work of one kind or other in the service of his enterprise. To that extent he is, in the broader sense of the word, a worker. We must, therefore, divide him up, in a sense, as a personality, in order that we may be able to conceive the pure employer separately.

The business of employer is in the actual economic life largely exercised by individuals who can hardly be called employers in the proper sense. The manual worker or the agricultural producer uses the aid of other factors of production besides his own labour in his productive process: the labour of others, capital, and land. Possibly he is himself mainly a worker. But we have to dissect his personality so that theoretically we can conceive him as an employer in that aspect of his work. In this way we are able, when we speak of employers, to include under that head all individuals who anywhere perform the work of employers.

The economic motive of this work is the effort to make a profit. The profit of the employer is the surplus of the gross returns above the cost: that is to say, above what has to be paid for the co-operation of the factors of production. If the employer himself to some extent acts as a worker or official, or introduces capital or land into the business, he must allow a certain sum, on current prices, as payment for the co-operation of these factors of production. It is the remainder that represents the real profit of the employer.

This profit is at first sight in the nature of a differential profit that is made merely as a result of the different cost in different businesses. It, however, includes elements which have an approximately definite price, and must therefore regularly be taken into account in the estimates on which a business is based. These prices are, therefore, to be put on the same footing as cost, and must be covered normally by the prices of the products.

To this class belongs, first of all, the personal work of the employer in his character as employer, in organising and directing the enterprise. This may in part be replaced by the paid work of officials. The manager of a medium-sized business performs a number of functions which are only handed over to heads of departments, and so on, at a later stage, when it becomes a large business. Work of this kind must clearly be reckoned amongst the costs of the business. Even the general management of the business, however large it is, may be entrusted to a salaried individual; as, in fact, is usual in the case of limited companies. In every economically advanced country there is a price for each of these functions of employers. This price follows the ordinary rules of pricing: the relative scarcity of competent individuals in proportion to the demand for them is the chief determining factor of the price of the employer's work. Thus the determining factors of this price are in the main the same as those of wages; though, naturally, the process has special features in the case of employers. The price of the employer's work must be included in the costs of the business. Every limited company does this, and every private employer who proceeds rationally must do the same. It may, if we wish, be conceived as a special factor of production together with labour in the ordinary sense. The special nature of the determining factors of the employer's wage seems to justify this distinction.

A second element of the profit of the employer in the broad sense of the word indicated above, which must be put on the footing of cost, is the risk—in so far as it can be calculated with some degree of probability and so included in the estimate of cost. This is particularly the case in regard to any risk against which it is possible to insure: fire, for instance, or shipwreck, and so on. As a rule insurance-premiums are paid for these risks and included in the cost. They must be put on the same footing, as cost, with depreciation of buildings, machinery, etc. When we regard production as a whole, accidents of this kind occur with a certain regularity, and they are therefore part of the normal depreciation of the things used in production. The payment of insurance-premiums is, substantially, merely a method of spreading evenly the amount to be written off for depreciation. This idea is recognised when, for instance, large shipping companies do not insure, in view of the great number of their ships, but form an insurance-fund of their own and enter the sums assigned to it under the head of current costs.

Against the general risk of the business as such it is, as a rule, not possible to insure. That this risk is, within certain normal limits, taken into account in business calculations is beyond question. It is seen, for instance, in the fact that in planning a business the interest on the capital is put at, say, 10 per cent., though the usual interest on the best securities is, perhaps, only 4 per cent. A sound business estimate of a limited company also reckons as cost the sums that must be set aside to form a proper reserve; as this must serve to cover losses incurred in the normal course of things. In so far as the risk of a business consists in a faulty estimate of costs, it must clearly be included as a special item in the estimate. This is also obviously true of the risk of an inevitable drop in the output or the selling price. Normally a price must be fixed that will cover occasional losses of this sort, so that on the average, taking long periods, the price actually obtained will suffice to cover the whole of the actual cost. This incurring of risk may itself be regarded as a special factor of production. In economically advanced conditions this factor has a market of its own and a fairly definite price. It may also be substituted for other factors of production; and this always happens when, in order to reduce cost, a lower grade of insurance is taken.

If we separate from the employer's profit these two elements, which can to some extent be estimated in advance, and must be regarded as real costs of production, we may look upon whatever surplus of the business remains as the employer's profit in the strict sense, a pure employer's profit. This accurately corresponds with our definition of such profit as the surplus of the gross returns over the cost; for here all the items that can be regarded as costs have been subtracted. There can be no doubt that in real life there is an employer's profit of this kind. It is particularly clear when limited companies, which pay their directors and consulting experts very generously, and also put aside large reserves for all sorts of purposes, not only pay interest on their capital, but also pay supplementary dividends. However, it is only in a relatively few cases that the employer's profit is very large. Most of them make a pure employer's profit only during favourable conjunctions. As a rule, perhaps, the returns hardly suffice to cover all the costs in the broader sense in which we have taken the word here. A comparatively large number of employers can never cover these costs; they work at some loss. The pure profit of the employer is in these cases always negative. Experience shows that some of these enterprises are maintained after sufficient writing-off and "reconstructions." Yet the number of concerns that fail entirely and disappear from view is very large. The public, which sees little of this, but is dazed by the enormous profits of a few prosperous concerns, is always disposed to exaggerate the extent of the pure profit of employers in the national economy.

There are, of course, no rules as to the extent of this kind of profit. It is not a normal thing, but a specific element of the individual business. It is often an outcome of sheer accident: for instance, some development of the market that is especially good for this particular business, on which the employer has had no influence. It varies a good deal, as a rule, with conjunctures in the relevant branch of trade. It further depends upon a privileged position which the business has secured in one or other respect. Possibly the business has long had an assured circle of customers, a privileged market, good long-term contracts with those who provide materials, good connections in the business world, etc. It has in a fully developed and well organised large business, perhaps, an advantage over small competitors: it has at its disposal so much capital that it can crush competition: it has a legal monopoly, or has reached a position of monopoly by forming a trust. The privileged position may also be due to personal factors. The business may have in its service managers, officials, and workers that do more, and do it better, than equally paid managers, officials, and workers of rival concerns. The whole organisation of the business, the customs and habits of the employees in common work, the interest of all in the prosperity of the business, are also factors that may give a business a privileged position. In many of these cases the position is the fruit of years of effort, and the pure profit of the employer that is now made is partly the outcome of the position that has been won. It can, however, easily be lost in the constant changes of modern economic life, where forces are always at work trying to dislodge old privileged concerns and create new ones, and the maintenance of it requires, as a rule, a ceaseless effort, an unrelaxing vigilance—in a word, exertions that must be paid for, and the price must be included in the cost.

In the cases in which a privileged position—whether won or due to extrinsic circumstances (" unearned ")—promises a permanent pure profit, this profit must be regarded as a sort of rent of position, and the position itself has a capital value which figures when the business is sold. But these things cannot be fully understood until we come to the inquiries in the next chapter.

The question to what extent the profit of the employer enters the price of the product can now easily be answered. The sections of it in the broader sense which we have recognised as real costs are, of course, to be regarded as normal constituents of the price of the product. Whether the pure profit of the employer is included in the price of the product depends upon the conditions of competition. If the business which yields such a profit is not in a position to supply the whole market, and other employers must have a share in the work, it is possible that the final business thus required will yield no pure employer's profit, and that, consequently, the price only covers the cost in this marginal business. In this case the price is, in accord with the differential principle, fixed by the marginal cost, and the pure profit of the employer which the better placed businesses yield is entirely in the nature of a differential profit, and is irrelevant to the price of the product. If, on the other hand, the business in question has a position of monopoly, and succeeds in using it to make a pure employer's profit, it can only be done by raising the price of the product above the cost, and employer's profit must in that case be regarded as part of the price of the product.

When the principle of cost is realised in an ideal way, as we have assumed in our general study of the pricing problem, there is no employer's profit of the kind we have described. Prices are then fixed in harmony with the principle of cost, in accordance with the conditions of equilibrium expounded in the First Book.

§ 19. The Problem of Attribution and the Social Problem of Distribution.

When two individuals have co-operated in making a certain article, the question easily arises how much each of them has contributed, or what is the share of each in the production of it. The general sentiment of justice demands an objective standard for settling the proportions of the return, and is disposed to find this in a causal connection between action and product. We thus get the problem of attribution. It is, therefore, not the outcome of a love of theoretical speculation, but has its roots in profound characteristics of the human mind. Its importance increases when we pass from the simple case of sharing between two individuals to the general distribution of social production. It is a most important matter in an age of extensive division of labour and sharp differentiation of classes in the community.

The idea that the returns can be shared according to the principle of causality, in proportion to the work done by each of the several factors, is very popular. It is confirmed when we consider cases in which the actions necessary to make the product are homogeneous, and can therefore be brought to a common measure. It is then possible to distribute arithmetically according to work done. But if the actions needed to make the product are of different kinds, it is impossible to judge them by a common standard, and there is no " correct " distribution in the objective sense.

This applies first to acts of the most varied nature which we are accustomed to class together as " work." There is no common measure for the work of the thinker, the artist, the manager of a business, and the manual worker. Their common product can never be shared according to the work done by each.

We see the impossibility of this kind of attribution still more clearly when to " labour " we add other factors of production of various kinds—capital, natural materials, or land. It is, however, precisely in this case that the problem of attribution attracts the great general interest which it has in modern economic life. It is just when the co-operating actions are quite different in their nature that the most serious controversy is possible as to who is to have the outcome of production. Each party is naturally inclined to lay stress on the importance of its own share of the work, claim as large a share as possible of the returns, and consequently declare the actual distribution unjust. The argument that is generally used is, as a rule, to imagine one's own share of the work withdrawn, and then ask what the other factors of production would do without it! Unfortunately, this argument has the weakness that it can be used with the same striking effect by the representative of each means of production that is indispensable. Taking away that particular means of production always reduces the result of the activity of the others to zero.

With the support of this argument it has actually been claimed that the entire result of the productive process belongs to labour, or " the right of the worker to the entire outcome of labour " has been put forward. We need not linger over the advocacy of this program, but the program itself is interesting as a fundamental element of Socialism, representing the positive expression of the denial in principle of the justice of an income based upon private ownership. It is for theoretical economics to make it perfectly clear that, and why, an attribution in agreement with this program is economically impossible; that, and why, for every exchange economy it is an economic necessity, independently of its legal order and particular organisation, to "attribute" definite shares in the total outcome of production to the other principal factors.

As the share of the total product that is to be assigned to one of the co-operating means of production cannot be calculated by measuring the effect upon the total product if that particular means of production were withdrawn, it has been attempted to make a calculation of its real share by imagining the effect of withdrawing a small part of it. This method, however, clearly breaks down when the means of production is not divisible or when one part of it cannot be withdrawn without throwing other means of production out of work. This is generally the case. We cannot, moreover, judge the effect of the means of production in question by comparing that increase of the product which is due to a small increase of the means of production with this increase itself, or, in other words, calculate the "marginal productivity" (§ 13). The latter is equal to zero as long as the addition to the means of production, without any corresponding addition to the other means of production, has no effect. If a pit has to be dug, the addition of one more man will make little difference to the day's output unless you give the man a spade.

Hence the idea of marginal productivity can properly only be applied when the means of production can co-operate effectively within certain limits, in any proportion we care to choose, and therefore the means of production in question can steadily be substituted for the others without altering the outcome of production. In that case, as we have seen, we can define a marginal productivity of the means of production we are considering. Its price must clearly, in a state of equilibrium, be equal to this marginal productivity; otherwise it would be more economical to use more or less of that means of production. The marginal productivity is then a measure of the share of that means of production in the results of production.

The idea of marginal production applies properly to a productive process that makes one single article. It cannot be extended forthwith to the distribution of the results of the entire social production amongst the factors of production. When we consider the production of the economy as a whole, it is quite possible to employ effectively all the factors of production even after slightly altering their proportions. This only depends in part upon a real substitution of one factor for another in the various partial industrial processes into which the total production is divided. For the rest, the complete use of the various means of production in accordance with the principle of scarcity is secured mainly by fixing a uniform price for each and distributing the existing quantities of them amongst the different branches of production according to the demand for them as regulated by these prices. Hence in the first place space is provided for an increased amount of a means of production by reducing the price of it and so stimulating the demand for those products for the making of which it is chiefly used. A marginal productivity of a means of production cannot, however, be defined in the social productive process as a whole as long as the prices of the products are indeterminate, and there is, consequently, no definite measure of the total product. In any case, the thesis that the price of the means of production is equal to its marginal productivity in the productive process as a whole can have no other meaning than that its price is the same in all applications in the different branches of production, and that the prices of the products can be determined according to the principle of cost on the basis of this pricing of the means of production. But this condition merely reduces the pricing of the means of production to the general pricing process which we studied in the First Book.

The attempt to solve the problem of attribution by an appeal to marginal productivity only shows that the problem cannot be solved as a question about the technical share of the several co-operating means of production, but is in its own nature an economic problem: a problem that is really only one side of the general problem of pricing. But in the pricing process, as we saw, the principle of scarcity is the paramount principle. The distribution of the common outcome of production is, therefore, mainly governed by the principle of scarcity, and the shares of the various factors of production are, consequently, substantially determined by supply and demand, not by any means entirely by the objective characteristics of production. That the principle of scarcity is modified in certain cases by the principle of substitution, and that this establishes an agreement between the price and the marginal productivity of the means of production, by no means signifies that the relative scarcity of the means of production has lost its fundamental and essential importance in connection with prices, and consequently with "attribution." The problem of the distribution of the total outcome of social production amongst the factors of production is thus primarily settled by the relative scarcity of these factors in proportion to the indirect demand of consumers for them.

The problem of attribution has its roots, as we saw, in the endeavour to find an objective standard of just distribution. This standard was sought in a sort of technical relation of cause and effect between activity and product. As there is no such key to the problem, there can be no just distribution in this objective sense. The problem is essentially an economic problem. All that has been written or said about justice in regard to the distribution amongst different means of production is, consequently, to be regarded as merely an expression of vague hyperbolic ideas that ought to have no place in a scientific treatment. Instead of the ethical problem, how much of the total product ought justly to be attributed to each co-operating element, we must take the purely scientific problem, how much, in the actual economic situation, goes, on economic grounds, to each of the different factors of production.

The solution of the problem is, as we saw, in pricing. This is determined by the principle of scarcity in conjunction with the supplementary principles; and all of them in turn are consequences of the general economic principle. It follows that for every economy which fulfils the economic requirements the principles of pricing, and therefore of economic distribution, are established. We can hardly conceive an organisation of the economy in which a faulty observance of economic rules would not be felt as a defect and would fail to provoke efforts to attain a better economic standard. No economic organisation would reach a state of equilibrium until the general economic principle and consequently our principles of pricing were realised. In this sense a distribution according to our principles of pricing can claim objective correctness from the economic point of view; and the shares which fall to the different factors of production in virtue of this pricing may be described as their economically correct shares.

These observations, however, are very far from closing the practical problem of distribution. No economy can continue to maintain prices, and consequently distribution, in express opposition to economic requirements. But the practical result of pricing in accordance with the principles of the exchange economy depends essentially upon the relative scarcity of the different means of production co-operating in the social productive process and upon the total outcome of the process. This problem of attribution presents itself from the start as a problem of abstract justice; but in the light of economic science it is reduced to a question of the actual nature of pricing in the economy. The social problem of distribution is something more. It includes the practical question, how the given factors of pricing can be influenced so that the socio-economic distribution resulting from this pricing will also be socio-politically satisfactory and promote the vitality of the nation and the efficiency of its work. This, however, as we shall see later, opens out a broad field for the action of practical economic and social policy on prices, and therefore on the social distribution. Unfortunately, ignorant politicians and philanthropists only too frequently try to urge a social policy in opposition to the principles of pricing. The clearer we can make the hopelessness of these efforts to social politicians, the more surely will they direct their powers to objects in which their useful activity may be able to secure a better distribution, or juster fixing of incomes, from the point of view of social politics. Not only social politics, however, but economic policy generally, ought always to remember that it can only attain permanent good for the community when it works in harmony with the general principles of the exchange economy.

In our actual system where private ownership extends to the material means of production, the shares which are assigned to land and capital in the pricing process go to the owners of those factors of production. The distribution of income in such an economy is, of course, strongly influenced by the existing distribution of property. The development of ownership is in turn, to a certain extent, determined by the distribution of income and by saving (in the broadest sense of the word). Moreover, the question of property is governed by the conditions in regard to heredity, the customs and laws which regulate the transmission of property at death. These things have an important influence on the distribution of income in the community.

As regards labour, it must be borne in mind that its value depends to a great extent upon general education and the special technical instruction of the worker. In an exchange economy in which the cost of educating the young falls mainly upon the family, the conditions of income and ownership have a very important influence on the distribution of income in the next generation. To a certain extent the community can obviously neutralise this influence by its general educational work, and particularly by assuming the cost of education.

The practical problem of the distribution of the total results of the social production is, therefore, not entirely settled by pricing. It includes various elements apart from pricing, and these open out a possibility of a deliberate regulation of the distribution. Hence any inference from the necessity of pricing to the supposed necessity of the actual distribution would be unsound; and, consequently, any attempt to construct a "natural harmony" of the economic life on the basis of our theory of prices would fail. General social and economic policy has a much broader sphere than theoretical economics proper. The work of the latter is to elucidate pricing. No general theory of social policy is possible except on the basis of a strict economic theory; but it has other tasks, beyond this, with which theoretical economics cannot deal, and these mean an enlargement of the pricing or the "attribution" problem into a general problem of social distribution. A general theory of social policy must also work, in part, with different methods and definitions. For instance, it might be proper for it to distinguish the forms of income primarily as the two main categories "property income" and "work income," and direct its attention to the various possibilities of acting beneficially upon these incomes and their distribution. Theoretical economics has nothing to do with these matters. Its special purpose requires that it shall make it its chief business to explain the nature of the various kinds of incomes. It has, therefore, to classify the kinds of incomes according to their various characters from the point of view of pricing, and it must thus come back always to the old division into wages, rent of land (including prices of natural materials), and interest on capital. It must give its attention especially to the correct description of these kinds of incomes and the corresponding factors of production, as well as to the study of the determining elements of the prices of these factors of production. That is the aim of the following chapter.

CHAPTER VI

THE INTEREST ON CAPITAL

§ 20. The Evolution of the Theory of Interest.*

ALTHOUGH most of what has been said in earlier centuries about the problem of interest is best left in oblivion, it is always instructive to follow the broad lines of the development of human thought on this problem, as it gives us a clear insight into the difficulties connected with it, and may yield important clues to the final solution of the problem. All that we have to do is to understand the various tendencies we find in their relation to the general development of the theory, and so correctly appreciate whatever is valuable in them.

The condemnation of interest by the medieval Church makes it very difficult for a modern man to bring this sympathetic understanding to the matter. Even here, however, we find, on impartial consideration, circumstances that explain, and to some extent justify, the point of view. As loans were in those days, perhaps, generally made to men in poor economic circumstances, the attempt to make these loans a source of profit easily assumed the appearance of an attempt to exploit people's hardships; as, unquestionably, was very generally done. From this point of view, nations at primitive economic levels have, as Roscher points out, generally shown a repugnance to interest, and most religions which were based upon primitive economic conditions have forbidden it.†

While, however, we recognise this element in the practical policy of the Church, we must point out at the same time that the canonists by their attitude toward interest greatly increased the difficulty of understanding its nature. As they were bound to admit it in certain cases, they used all the weapons of sophistry to distinguish these cases from the others, and they thus helped to obscure the essential unity of the phenomenon. The right to compensation for any loss which the lender suffered in making the loan was recognised and called "interest": the word which we still use in English and French. As this interest, moreover, was recognised in the case in which the lender would have made a profit by some other use of his money, people were bound in time to see the identity of the interest on a loan and the interest which capital yields in remunerative businesses. This recognition must have encouraged the custom of buying fixed ground rents; for in this form the landowner could always get capital for the better working of his land by paying a rent which is nothing else but interest. In Germany, where the purchase of such rents was very general, it became the custom to give the same name Zins (=*census* or "rent") to any just payment on account of a loan. However, the struggle of the indispensable requirements of practical life against the hair-splitting distinctions of the canonists had to go on for several centuries before the essential unity of the various forms of interest was generally recognised, and the ground was won on which a scientific theory of interest could be gradually constructed. This period was also the time when freedom of thought was secured. The appeal to medieval authority now gave place, first, in the Mercantilist age, to discussions of the practical advantages and disadvantages of a lowering of the rate of interest, then, under the influence of Liberalism, to the real study of the determining factors of the rate of interest under free trade.

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* For a fuller account of the subject and for bibliography see Cassel, *The Nature and Necessity of Interest* (London, 1903).

† *Grundlagen der Nationalökonomie* (22 Aufl., 1897, § 190).

The power of the State, which succeeded that of the Church at the beginning of the new period, tried to check exploitation in the form of exacting interest by laying down a certain maximum rate of interest. This policy was bound to lead to perpetual discussion of the correct maximum, and therefore to a closer study of the effects of high or low rates of interest; which would give a certain insight into the significance of the rate of interest in the economic life. Reflection on the effect of this rate of interest on other factors of the economic life was bound gradually to make clear the fact that these other factors in turn determine the rate of interest; that it is a purely economic phenomenon, as to which policy cannot do what it likes. In England this conception of interest was developed very clearly by the end of the seventeenth century. With the rise of the liberal-economic theory in the eighteenth century it became self-evident that interest must be treated as a market price determined by supply and demand.

It remained, however, to show more clearly the form of service which is an object of supply and demand and for which interest is consequently paid. In this respect the period of the rise of Liberalism led to several important advances. The first thing to do was to deliver the theory of interest from the old confusion of money and capital. As loans were generally made in money, it was quite intelligible that money should be regarded as the essential object of the loan, and fluctuations of the rate of interest should be traced to a surplus or a scarcity of money. The modern business world has scarcely yet rid itself entirely of these ideas, as one can see by looking at any leading article in financial journals, especially in the usual phrases about "cheap or dear money." In spite of all this, the knowledge that money has only an intermediary part in a loan, and that the loan itself consists essentially in handing over for a time the right to dispose of capital made great progress.

Since then the theory of interest has been based upon the assumption that money is only an accidental form for the conveying of capital, and that it must disregard this form when it would explain the dependence of the rate of interest on the capital market. Beyond question this assumption has been very useful, as it meant the detachment of the problem of interest from the theory of money, and so facilitated a separate treatment of the former. But it is just as certain that the said assumption is only permissible as a temporary simplification of the problem. A theory of interest which omits entirely the influence of the money supply on the rate of interest, consciously or unconsciously assumes a static condition of money, and so cannot possibly understand the connection between the rate of interest and the value of the monetary-unit, and consequently cannot thoroughly grasp the nature of money. Hence if we, for the sake of simplifying, ignore the money-form of the loan in dealing with the theory of interest, this merely means that we reserve the reciprocal relations of money and interest for subsequent consideration. The proper place for this is the theory of money, and is, as a matter of fact, the concluding part of it (compare Chapter II.).

The conception of the loan as a temporary handing over of the right to dispose of a sum of values—an abstract capital—and of interest as the price of this accommodation, was advocated with great clearness by the French economists Turgot and J. B. Say. The conception of interest as the price of a control of capital has the great merit of making clear the service for which the interest is paid, and of emphasising the fact that the interest is a *price*, which means that it is put on the same natural footing as other prices, and the organic arrangement of the problem of interest as an integral part of the pricing process as a whole is made clear from the start.

From another point of view also the definition of interest needed greater precision. It was the custom in England especially to call the entire income taken out of a business "profit," including the interest on the capital of the owner of the business. In order to develop the theory of interest it was most important that the profit should be analytically divided into interest on the employer's own capital invested in the business and his profit as an employer. Until this was done it was impossible to grasp properly the factors which have an influence on the rate of interest from the side of either supply or demand, and to take into consideration the total demand for the disposal of capital in studying the problem of interest. A sharp distinction of this kind between interest and employer's profit, between the function of the capitalist and that of the employer, was made by J. B. Say. He regarded the disposal of capital as one of its "productive services." For him, therefore, the fixing of the rate of interest was part of the general pricing process by which the prices of productive services are settled. The actual demand for the control of capital in this process of pricing starts from the consumers of those finished articles for making which a control of capital is required.

These results provided the framework within which a complete theory of interest could have been developed. There were still needed a more solid general theory of pricing, within which interest would find its natural place as a price, and a thorough study of the circumstances which determine the supply and demand of the control of capital, and especially of the influence of the rate of interest itself upon these factors. Unfortunately, the development of the theory was now interrupted, as serious study of some highly speculative theories, very alien to the real economic life, was pushed to the front. One of these was the Socialist theory of value, the other what is called the wages-fund theory. We must postpone the full consideration of these theories until we come to the theory of wages (Chapter VIII.). As to their significance in connection with the theory of interest a few observations must suffice here.

The main thesis of the Socialist theory of value was that value is a commodity equal to the quantity of labour which it costs to produce it in normal conditions. This quite arbitrary thesis, utterly opposed to the facts, naturally excludes in advance, not only interest itself, but the possibility of any rational theory of interest. As it leaves no room for an objective study of the pricing process, it makes it impossible to investigate interest as a price forming part of this process. Any theory of interest based on that thesis can be pronounced in advance to be nonsensical and it has no claim to be regarded as a scientific performance. A science that in this respect makes concessions to the scholasticism of Karl Marx does not know what it is doing. Nevertheless, the study of interest in a Socialist community is interesting to some extent, as it may help to elucidate its economic character. We return to the point in § 26.

The wages-fund theory regarded capital as a definite fund for the maintenance of the workers during the productive process. The average wage of the individual worker was settled by the ratio of this fund and the number of workers. On this conception of the function of capital it is clearly impossible to explain the significance in connection with the rate of interest of the fluctuating demand for finished goods or the selection of methods of production. In regard to the supply of control of capital the wages-fund theory taught, as Smith and Ricardo did, that a fall of the rate must in the end check saving, which would reduce the supply of the control of capital; but it impressed its sterile dogmatism on this idea also, and reached results which were inconsistent with substantial facts of the economic life.

The two schools were also a hindrance to the further development of a scientific theory of interest because they constantly transferred the controversy to the ethico-political field. Against the Socialist denial of the justice of interest the opposite school made a strenuous attempt to justify it morally; and the controversy between the wages-fund theory and its opponents also was conducted to a great extent in the sphere of morality and practical politics. The real objects of science were thus lost sight of.

Yet the nineteenth century made positive contributions to the theory of interest. These contributions mainly consisted of a closer study of the circumstances which determine the supply and demand of the control of capital. On the side of the supply the investigations were prompted by an anxiety to justify interest by the sacrifice which the formation of capital imposed upon savers. The English economist Senior* showed that such sacrifice must be regarded as a necessary "instrument of production," and as such must be put on a level with labour and nature. He called this factor of production "abstinence," a word of rather a moral complexion, which provoked the derision of Lassalle, who made it look ridiculous by depicting the great millionaires of Europe as ascetics for the good of the community.† Later writers have pointed out that the formation of capital in the modern system is only effected to a small extent by those classes of the community to whom it would really mean "abstinence" as a sacrifice; for the most part it is the outcome of the reserves of large businesses, large speculators, and large capitalists.‡ For an act that is performed under such very different conditions a quite colourless name had to be found, one that would bring out the essential and consistent meaning of it in the exchange economy. The French *ajournement*, and the English words "postponement" and "waiting," were suggested. The last word seems to be the most suitable. Interest must, in relation to the supply, be regarded as the price that has to be paid for "waiting." Like every other price, it must be such that it will attract an adequate supply, yet sufficiently restrict the demand. The fact that a certain amount of "waiting"—a certain amount of capital-disposal—could be had even if the interest were lower than it is, that, in fact a certain amount would be available if the interest were equal to zero, is of no consequence.

The "waiting" means that a man forgoes for a time the disposal of a certain sum of value. By this he enables another to dispose of capital for that period of time.

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* Senior, *Outlines of the Science of Political Economy* (5th ed., pp. 58-60).

† Lassalle, *Herr Bastiat-Schulze von Delitzsch, der ökonomische Julian; oder, Kapital und Arbeit* (Berlin, 1864).

‡ *Cf.* B. Schmoller, for instance, *Grundriss der allgemeinen Volkswirthschaftslehre* (1904), II., pp. 176-7.

The "waiting" is thus, arithmetically considered, of the same magnitude as the control of capital, and is, like it, measured by the product of the capital and the time. It is, therefore, not generally necessary for the theory to use both expressions. We will in what follows use the word disposal of capital to indicate also the service which savers render to the capital market.

In thus defining "waiting," we have at the same time defined the service for which interest is paid as an arithmetical quantity. It, therefore, seems to be a decided retrogression when Menger and Böhm-Bawerk try to base the theory of interest on a supposed lower estimate of future than of present enjoyment. The formula can only mean that in certain circumstances the "waiting" implies a sacrifice that must be compensated by the payment of interest if it is to be done at all. But in point of fact these circumstances are not always found, because, even if the rate of interest were zero, there would assuredly still be a certain amount of interest. Moreover, this slighter appreciation of future goods varies a good deal, and no such thing as a consistent or an average feeling of the kind can be assigned. The idea of a lower valuation of future goods is not new, and, in any case, it cannot be made the basis of a real theory of interest. Such a theory should know to what extent and in what degree this lower appreciation occurs in actual life, and therefore to what extent an interest must be paid as compensation for "waiting." It is not enough to state the fact that "waiting" must be compensated by interest. The question must be: How much "waiting" will be offered at any particular rate of interest? In other words, how far does the supply of capital-disposal depend upon the rate of interest? When we thus regard the supply as a function of the rate of interest, it is clearly necessary to have an arithmetical expression of the supply.

Now let us consider the circumstances which determine the demand for capital-disposal. Real insight into this aspect of the problem of interest was impossible as long as the importance of concrete capital was kept in the foreground, and the use which this has in the immediate satisfaction of wants and in production, and consequently the direct applicability and productivity of real capital, was given as an explanation of the payment of interest. An argument of this sort, which, moreover, only holds for durable goods or fixed real capital, could only show that the services of a durable good must have a price just as the article itself must. This truth is not without importance in connection with the theory of interest, but it tells us nothing about the heart of the problem, as it gives no information on the question how the proportion between the price of the services of the durable good and the price of the article itself is regulated. As we shall see presently (§ 22), this question can only be fully answered when one conceives the disposal of capital as an independent factor of production, and the pricing both of the durable goods and their services as one aspect of a single pricing process of the exchange economy.

The older economists had mostly imagined capital as a fund of the necessaries of life with which the workers could be maintained during the course of the productive process. It therefore consisted mainly of necessaries of life, clothes, etc., which were intended for the workers. The more of such capital one had, the longer one could wait for the outcome of production and the more effectively, therefore, one could equip the productive process with tools and machines, with a better cultivation of the soil, and so on. Hence the real importance of capital in this sense must be that it enabled some time to elapse between the beginning and the end of production. This idea, which seems once to have been generally accepted, was most precisely formulated by Jevons. He says that the sole use of capital is to enable us to "lengthen the average interval between the moment when labour is exerted and its ultimate results or purpose accomplished."* This lengthening of the period of production increases the productivity of labour. Given the rate of interest, the lengthening of the period of production can, and must, be continued as long as the increase of the product that is obtained by means of the ultimate lengthening covers the special cost of interest which the lengthening entails. The interest that is paid for the unit of control of capital is, therefore, equal to the marginal productivity of the lengthening of the period of production that is facilitated by this disposal of capital. That is Jevons's theory of interest.

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* Jevons, *Theory of Political Economy* (London, 1879), p. 248. Compare, also, pp. 242-3, where capital is defined.

It undoubtedly marks a great advance in our knowledge of the circumstances which regulate the demand for capital-disposal, but it has a certain one-sidedness from which we must set ourselves free. In the first place, Jevons's idea of capital is clearly factitiously and unnecessarily restricted. What enables the advanced economy to leave a time between the productive work and the outcome of production is, as we saw (§ 4), not an accumulated stock of necessaries of life, but the whole existing and continuous process of production, including the real capital which is employed in it. But this defect of Jevons's theory, due to an imperfect analysis of the conditions of the continuous social process of production, can easily be remedied, as in the above theses we can simply substitute our idea of the disposal of capital for his idea of capital.

But there is another one-sidedness of the theory, also connected with his idea of capital—namely, when he sees the significance of capital only in the fact that it enables us to undertake production that requires time. The gradual using-up of a durable good also takes time, and by far the greater amount of the disposal of capital is required, as we shall see (§ 23), to enable us to wait for the successive services of durable goods. These essentially different sources of the need for the disposal of capital we must not try to compress into a single form by artificial constructions.

Finally, it is a defect of Jevons's theory of interest that it can see the importance of the last piece of disposal of capital exclusively in a lengthening of the period of production. It is part of the definition of the disposal of capital that capital and time assume a symmetrical position: a certain quantity of control of capital which is introduced into a productive process may, therefore, be used, not only for lengthening the process, but also for enlarging it without altering the period of production. The lengthening of the process of production in Jevons's sense really means a substitution of control of capital for labour or, in general, for other factors of production. As Jevons wants to settle the interest by the marginal productivity of the lengthening of the period of production, this means that he attributes the pricing of the disposal of capital entirely to the principle of substitution, and loses sight altogether of the principle of scarcity. But this latter principle is, as we have seen, always the fundamental principle of pricing; in comparison with it the supplementary principles are to be regarded as modifications. This conception of pricing must be applied to the disposal of capital. The interest must, being the price of the disposal of capital, be primarily determined by its scarcity. This fundamental explanation must not be obscured by the fact that the scarcity of the control of capital may be modified by the possibility of a substitution of other factors of production for it. The interest must, in any case, as the price of the disposal of capital, be determined by its scarcity, even when no such substitution is possible. In a conservative agricultural economy, which runs on always in the same grooves, an increase of the capital would lead to no change in the period of production, but it might, if there were an opportunity, lead to the enlargement of the cultivated area. In such case the interest would depend upon the proceeds of the use of capital on the new soil, and therefore could not be determined by the productivity of a lengthening of the period of production, but must be directly traced to the scarcity of the command of capital.

Even where the quantities of the other factors of production are given, however, the interest must, when the methods of production do not vary, be determined on the basis of the principle of scarcity. A surplus of capital-disposal always finds a use, on account of the relative increase of the demand for those finished articles which require a particularly large disposal of capital for their manufacture. This case clearly cannot be pressed into the scheme of a "lengthening of the period of production" without giving it some different meaning than that of a change in the method of production.

In this connection we must also point out that to assume an "average period of production" is, strictly speaking, equivalent to assuming only *one* process of production with *one* single period of production. Such an assumption excludes in advance a demand for articles the making of which would make different claims upon the capital-disposal. The unscientific use of the word "average" is, unfortunately, only too apt to introduce these important assumptions unwittingly into the discussion.

§ 21. CAPITAL-DISPOSAL AS A FACTOR OF PRODUCTION.

If we care to divide the whole of the means of production into certain leading categories, it at once becomes clear that labour and land must be counted as such, even if the precise definition of these general types requires a special analysis. Of the other means of production our attention is first drawn to the produced material goods which are actually in the process of production (§ 5). We call these real capital. But can this real capital be put on the same footing as the two other categories we have named ? The question is closely connected with the old controversy whether "capital" can be regarded as a separate factor of production: a question which, as is so often the case, could be disputed chiefly because the subject of the controversy was not clear. Obviously real capital is necessary for production, and from this point of view it must be regarded as a means of production. But it can be resolved into other means which have co-operated in producing it. Hence when we ask about the elementary means of production, which are not themselves an outcome of the productive process, it might seem as if no other factor of production, apart from nature, were required except labour (including the operations of employers under that head). As a matter of fact, this has often been held, and it is especially prominent in Socialism.

In order to be quite clear on the point, we have now to consider very carefully the actual conditions of production, and we must recall our distinction between durable goods and consumable goods (§ 2).

When a durable good is produced, it is for the sake of the services which it will perform when it is used. These services are the direct object of the demand. The thing itself is only an intermediary that is necessary for the satisfaction of the demand, and therefore cannot be regarded as the final term of the process of production. From the economic point of view the productive process must be regarded as continuous, leading up to the eventual satisfaction of wants through a series of different productive operations. Hence the building of a house is only the first stage in the productive process which seeks to satisfy the want of house-accommodation. The process is not completed until it has satisfied the want; and this only occurs by the gradual use of the house. The second stage of the productive process entails supervision, maintenance, etc., or new outputs of productive activity, though to a slighter extent. The essential thing is, however, that it takes time: in the case we are considering, indeed, much more time than the first stage. When the house is finished, a man must still wait a long time before he can enjoy all the fruits of the sacrifices.

This is a quite general circumstance, rooted in the nature of things, and does not in any sense depend upon the form of the economy. The farmer who works on his own account has to wait long years after making the sacrifices which building a house entails for the full fruition of them in the use of the house. In the exchange economy this inevitable waiting for the fruits of the sacrifices of the first stage of production may be taken over by another. The waiting is then clearly seen to be an independent economic function. It is, of course, conceivable that a group of workers who have built a house co-operatively will wait to receive their wages in the future rent of it. As a rule, they cannot, because they require the means to satisfy their daily necessities; or they will not, because they would rather enjoy the fruit of their work now than in a remote and uncertain future. Then there comes along another person who buys the house, in order to collect the rents afterwards. The workers now get compensation for their productive output immediately after the house is finished. The other man takes upon himself the work of " waiting."

What we have said about houses applies to every other durable good. It does not matter whether its services are required for the immediate satisfaction of wants or for production. The manufacturer who buys a machine has to wait for compensation for his sacrifice until the machine has rendered full service in productive work in his factory. In many cases the producer transfers the work of waiting to another, and is content, like a tenant of a house, to pay rent for the durable good in question. Manufacturers rent factories, merchants rent their premises, even large railways sometimes rent their trucks.

The function of waiting for the services which a durable product is able to render in the course of its life is, therefore, a necessary prerequisite before the article will be produced. If neither the producers themselves nor any other person will take on the waiting, production is economically impossible. Who undertakes the function is a secondary matter. The main thing is that it must be undertaken by somebody. But in order to undertake this function a man must have at his disposal a certain capital in the abstract sense; that is to say, a capital corresponding to the cost of production of the good. The man who buys a house when it is finished must have the sum at hand to buy it. He pays this to the builders, who do what they like with it. For his part he has "tied up" his capital in the house. The price of the house represents the capital tied up in it. Waiting for the services of a durable good thus entails the disposal of a certain amount of capital. Hence this command of capital is a necessary condition of production. When the capital-disposal necessary for waiting for the services of a durable product cannot be found, the product cannot, economically, be made. If a man asks in advance whether a certain durable good is to be produced or not, he must bear in mind that the economic object of such production is to secure the services of the article, and this object can only be attained if one has the command of capital required to be able to wait for the necessarily successive services of it, or at least a reasonable hope that someone will put this at his disposal when the industrial process of production is finished. Thus this disposal over capital is just as necessary for the purpose of production as any other means of production that is required for the making of the durable good, and it must, therefore, be put on the same footing as the other means of production.

"Waiting" and "capital-disposal" are synonymous terms for the description of this means of production. "Waiting" emphasises the negative aspect of it, the foregoing for a certain time of the consumption of an existing capital. The capital-disposal is the positive command of capital during the same period which is thus provided.

We have restricted the idea of real capital so as to include only material goods which are actually in the process of production. Obviously we must restrict the idea of capital-disposal in the same way, and therefore not extend it to waiting for the services of those durable goods which have already definitively passed to the consumer.

Waiting for the services of durable goods is, of course, only a necessary factor of production in so far as there really is question of production. When the production of a durable good is projected, the disposal of capital that is required to wait for its services must be counted in the same way as anything else that is necessary for the production. Precisely for that reason capital-disposal is a necessary factor of production. If, on the other hand, the durable good is finished, one has to wait to see whether the requisite control of capital can be found or not. If no one will pay more than half the cost for the article, there is a loss, which the producer must bear. The vendor has then, of course, only half the command of capital at his disposal. This disturbs the conditions for a continuance of production. We cannot infer from this that the control of capital is more or less superfluous, or that any amount of it whatever will do. That would be much the same as saying that it is unnecessary to pay for a piece of work done if one has merely promised in advance to pay for it. If it is to be possible to continue to produce durable goods in an invariable form, it is obviously necessary that the required disposal of capital shall always be at hand to take over the finished articles.

Since, then, capital-disposal is only to be regarded as a condition of production, the use of the non-reproducible durable goods, especially land, certainly entails waiting for services, but, as the price of such goods is not settled by cost of production, it does not require a definite disposal of capital.

The necessity for capital-disposal in the economic process of production, which we have now proved, is based upon the fact that *the use of durable products takes time.* This is by far the most important, but not the only, source of the need of capital-disposal. It is also needed for production in the narrower technical meaning of the word because *production takes time.*

Certain kinds of work—cooking, massage, etc.—serve for the immediate satisfaction of wants. The fruit of such work is enjoyed at the moment the work is done, or immediately afterwards. The most work, however, has to be done in the earlier stages of production, and is only of use when the product is finished. To simplify the matter, we may assume that material and tools have no appreciable part, and that the product is made by a group of workers without outside help. It is then conceivable that the workers can wait for their wages until the article is finished, and receive the article or the price of it as wages. But they may transfer the waiting to another, in order to draw the wages for their work at once. The other, who undertakes the waiting, has then to pay the workers as production proceeds, and he gets his compensation in the finished article or the price of it. In order to be able to wait he must have the disposal of a capital corresponding to the price of the product at the time, and equal to the price of the finished product at the end. If the workers themselves undertake this waiting, they have to have the disposal of exactly the same amount of capital. It is true that they do not, nor does anyone else, need to have the whole sum in advance. If they have capital enough to enable them to live during the time of production, they can collect the capital that is required for taking over the product gradually, by means of their productive, but unpaid, labour. This increasing capital is, during the course of the process of producing the material good in question, tied up in the good. It is only when someone is prepared to find the requisite disposal of capital that the production can be undertaken. Hence the corresponding command of capital is in all circumstances a necessary condition of production, and therefore it must be put on the same footing as the other means of production.

What we have said here of labour applies to all the means of production which co-operate in the process of production. This co-operation must take place in the earlier stages of production, and its use only appears when the product is finished. It is, therefore, necessary to wait for the compensation for this co-operation. The fact that the production takes time makes it necessary to have the disposal of a certain capital, and this generally increases during the whole period of production. The capital required is at each moment equal to the value of the product.

In certain cases the product may serve to satisfy wants even at earlier stages, but it is better and larger if further development is awaited. That applies particularly to forests. We may use a tree now, or we may let it grow for another ten years. This, however, requires the disposal of a certain capital, corresponding to the selling price of the tree at the time. This leaving to mature—it applies to other things also, such as the maturing of wine—has its importance, and so it must be regarded as a source of the need of the disposal of capital.

The wheat-harvest could be consumed in the autumn, at least to a far greater extent than it is now, but it would then not meet the needs of the later part of the harvest-year. We economise with the wheat, and spread the consumption of it more or less evenly over the entire year. This requires the command of a certain capital, equal to the total price of the remaining stock of wheat at the time. This necessary economising with a stock that must last a certain time is another source of the need for the disposal of capital.

These last two sources, however, need not be regarded as separate. They may both be brought under the general need due to the fact that production takes time. We reckon the productive process to the moment when the products pass to the consumers.

Our division of capital-disposal into that which is required because the use of durable goods takes time, and that which is required because production in the technical sense takes time, corresponds, as is clear, to the division of real capital into fixed and circulating (§ 5).

In studying the static economy (§ 5), we found that a constant reproduction of real capital was necessary to maintain it. This reproduction naturally presupposes in the exchange economy that the various concrete goods which constitute real capital have prices corresponding to the cost of production, and that, consequently, the capital-disposal for acquiring them is always available.

Since the two sections of real capital, fixed and circulating, are themselves maintained invariable, they each require, in harmony with the above-mentioned two chief sources of the need of a command of capital at constant prices, a constant capital-disposal. This means a certain demand upon the willingness of the community as a whole to make the sacrifice of waiting, or to " save," taking the word in the general sense.

In our actual economy the individual owner of capital generally finds it possible to consume part of his capital. He may, for instance, collect a payment due, and use the money for his current consumption. There are always some owners of capital acting thus, and so a certain amount of command of capital is withdrawn from the economy in every period. Hence new savings have to be provided to the same amount. Unless this condition is fulfilled in each period, the economy cannot be maintained in a stationary condition. The demands that are made on the members of the community for this purpose are thus always in force. Waiting is a factor of production which even in the stationary economy must always be available. This is a fuller characterisation of that attitude of will of the economic man which we described in § 5 as a necessary condition of the maintenance of the stationary economy. In this respect the progressive economy naturally makes greater demands, since in it real capital must not only be maintained, but constantly augmented; and therefore an ever-increasing quantity of disposal of capital must be available—that is to say, there must be positive saving on the part of the community.

The command of capital—the ability to dispose of a certain capital for a time—is not only, for the two reasons given, a means of production, but it is an *elementary* means. From the side of the supply it is, as we saw, a " waiting," a temporary foregoing of the satisfaction of wants for which one has the means. This is, clearly, a personal service of a particular character, and cannot be resolved into others; it must be described as really "elementary." It must be borne in mind that in this inquiry we have as yet said nothing as to the extent to which this service must be paid for. So far we have merely established that the capital-disposal is an indispensable means of production, and it must, therefore, be regarded as a factor of production, and be put on the same footing as the other factors, labour and land.

The source of the supply of this capital-disposal is saving. The means which savers make available by undertaking the function of waiting are for the most part, though not entirely, used for paying wages, and are then used by the workers mainly for buying the necessaries of life, paying rent, etc., and thus consumed. That is the reason why the classical school saw the rôle of capital in its facilitating the maintenance of the workers during the course of production, and conceived capital as an accumulated stock of necessaries of life for the workers. We have seen that this is really wrong (§ 6). There is no store of means of existence in the modern continuous economy. The continuous process of production pours out a steady stream of products, partly articles for the immediate satisfaction of wants, partly real capital. The savers have, on the basis of the saved part of their income, a claim to a certain part of these products; and they carry it into effect by buying, either directly or through the mediation of others, the newly produced real capital. The workers also, in virtue of their wages, have claims to a certain part of the social product; they realise their claim chiefly in the form of a demand for finished goods for their consumption. In this way the whole of the unsaved income of the community is used. In a state of equilibrium production is directed by these claims, and, in correspondence with them, it is divided between the increase of real capital and the direct satisfaction of wants. The means which the savers make available are thus in reality only their claims upon the results of social production, not concrete consumable goods.

Nor are these means accumulated in advance. The savers invest their savings at the time they are made (see § 47, at the end) by putting them at the disposal of employers. Thus the new demand for command of capital is fed daily by new savings, and these are used at once, directly or indirectly, for purchasing real capital.

The income of the economy that is not saved is used to pay for current consumption. This consumption is directed partly to the consumable goods which issue in a steady stream from the productive process, and so need not be accumulated in advance, and in part to the use of durable goods (houses, streets, railways, theatres, etc.). To satisfy all these requirements the economy must, as was shown in §§ 5 and 6, possess a certain real capital (partly fixed, partly circulating), and in the progressive economy it must be a steadily increasing capital. On the other hand, a stock of finished goods is generally unnecessary.

There may, of course, be saving amongst the workers, and to that extent they take over a part of the newly produced real capital. When the savings-bank deposits of the manual workers in the building trade are loaned on mortgage to the master builder, the workers really take over part of the command of capital that is needed for the house at which they themselves are working. A small peasant, who constructs a house himself, does the same to an even greater extent; he himself for the greater part finds the necessary capital-disposal. He can do this partly because he draws an income from land, with which he can, if necessary, support himself while he is building, partly by restricting the satisfaction of his wants, which goes much further than would be necessary in doing such strenuous work for wages. Here again, therefore, there is saving, and it sets free productive forces for the production of real capital. The capital that is needed for acquiring the house is created by the man himself, by his work, for which he asks no immediate satisfaction of his wants as compensation.

The capital which the savers make available is expressed in the exchange economy by a certain sum of money. A sum of money, or an abstract sum expressed in the price-unit, is an elementary arithmetical quantity which has its own dimension; just as in physics we have length, weight, and time. We will call this purely economic dimension M, and the dimension of time, which is very important in economic science, T. The productive service which we call capital-disposal thus has the dimensions MT. This means that the service is measured by the product of a sum of money and a time. The unit of this compound magnitude is the disposal of the monetary unit during the time-unit. For instance, if we take a hundred pounds as the money-unit and a year as the time-unit, it is the disposal of a hundred pounds for a year. As the service of capital-disposal is only measured by the product of a sum of goods and a time, it is in principle independent of those changes of the sum of money and the time which leave the product unchanged. For instance, the capital-disposal of a thousand pounds for one month is equivalent to a capital-disposal of five hundred pounds for two months; which is easily seen when one reflects that a person who has the command of a thousand pounds for two months can twice provide either one or the other of the said capital-disposals. But we shall see in the next section that in practice there is a certain difference between capital-disposal for a short or a longer term.

Now that we have made clear the meaning of this capital-disposal as a necessary and elementary means of production, we come back to the question from which we started in this section, to what extent real capital is to be regarded as a separate factor of production. To answer the question we must refer to the contents of §§ 5 and 6. The use of fixed real capital is resolved, on the one hand, into a using-up, which must be replaced by maintenance and renewal—by production—and therefore means a need of more remote means of production; and, on the other hand, into a capital-disposal for the period of the use, and this disposal must be regarded as an elementary means of production. The use of circulating real capital is a consumption which must be replaced by the aid of more remote means of production. This use requires, to supplement it, a disposal of capital while waiting for the result of the sacrifice that has been made. It seems, then, as if real capital itself were not a separate factor of production.

But if we confine our analysis of the exchange economy to a period that begins in the present the real capital in existence at the beginning of this period must be conceived as a given factor of our problem, not to be further analysed, and therefore, as it is required for production, to be put on the same footing as the elementary means of production. Thus the resolving of real capital into elementary factors of production brings us back both to the real capital existing at the beginning of the period and the capital-disposal offered in the period, and, of course, to the other elementary factors of production available during the period. The position of the real capital given at the beginning of the period or of the services of it in the pricing process, which has been indicated substantially in § 12, will be further considered in our inquiry into the nature of rent (§ 22 and Chapter VII.).

§ 22. Interest as Price.

Up to the present our inquiries have shown that capital-disposal is a necessary factor of production. Whether anything is to be paid for this factor is a question that must not be decided by any ethical or sentimental considerations as to the value of services rendered by capitalists. It depends entirely upon whether the supply of capital-disposal is scarce relatively to the demand; in other words, whether it is necessary to put a price on it sufficient to check the demand or to stimulate the supply.

In point of fact, as everybody knows, a price is always paid for the capital-disposal. This is proof enough that in our actual economic life such disposal of capital is really scarce. If there were no such scarcity, certainly nothing would be paid for it. The fairly general idea that in modern life a surplus of capital is created by excessive saving is thus wrong.

The price that is paid for capital-disposal is called interest on capital, or, briefly, interest. In reality interest often includes a sort of indemnification for a certain risk connected with the loan. This premium on risk is regulated by its own laws, and it has nothing in common, theoretically, with interest. The theory of interest must ignore the risk: it must regard only loans where there is perfect security. There is, of course, no such thing in human life as absolute security; but it is enough to take account of cases where the security is so good, or is esteemed to be so good, that the risk need not be considered, and nothing is paid for it. In such cases the interest contracted for represents a pure interest in the sense of the theory.

Moreover, in real life the rate of interest varies according as the capital is loaned for a long or a short period. The rates for short period loans vary a good deal more than those for long periods. This is particularly the case in regard to what is called daily money; but the discount rate also shows considerable fluctuations.

The question is, therefore, What rate of interest shall we take as the subject of inquiry in our general theory of interest? It might be answered that a complete theory of interest must, obviously, include every kind of interest and find the determining factors of the various rates. Here, where we must confine ourselves to an elementary study of the phenomenon of interest, it seems best to take a typical form of the purchase of capital-disposal. We have then, clearly, to choose the long-term loan. The bulk of the capital-disposal is required, as we have seen, for the use of durable goods, such as buildings, railways, waterworks, and so on. For these purposes the capital-disposal must be for a very long period, if not perpetual. For this reason the rate of interest for fixed loans, mortgages, and similar transactions must be regarded as the typical rate. We must, however, bear in mind that the rate in question should not be raised on account of any serious risk, nor reduced on account of any special measures—as the United States, for instance, has successfully done for its bonds by means of its bank-note policy. The type of interest on capital that best reflects the actual state of the market for fixed disposal of capital is, perhaps, the interest that is paid for first mortgages on pieces of land. In Western Europe this rate of interest is quite generally between 3½ and 4½ per cent.*

When we glance at the history of the rate of interest, and compare the older with the modern rates, we must remember that the rate of interest is a market price, and so only those rates must be compared that are paid on advanced markets, and when there is no need to take risk into account. If these simple and obvious precautions were always taken, the very exaggerated idea of the fall of the rate of interest during the historical period would never have arisen, and the theory of the inherent tendency of the rate to fall would not have found any supposed support in historical experience. When Canon Law still ruled, the taking of interest was often accompanied by great risk and in any case great unpleasantness. It is obvious that this greatly restricted the number of money lenders, and added a good deal to the rate of interest as compensation for risk and other disadvantages. These rates cannot be compared with ours. When a real capital market began to be formed in the chief centres of trade in Europe, we find rates of interest as low as the lowest of our own time. In Holland, for instance, the rate was about 3 per cent. in the middle of the seventeenth century; and the effective rate of interest for the best security at the time of the French Revolution was 2½ to 3¾ per cent.

The following inquiries relate entirely to the interest that is paid on fully developed markets for long-term loans, not specially favourable, but with perfect security.

As it is the price of an elementary means of production, interest is determined, like all such prices, as part of the great pricing process. The disposal of capital is available in every period to a limited amount, and in the same period there is a demand for it—due, in the long run, to the demand for finished goods—which can only be sufficiently checked by fixing a price for the disposal of capital. In the systems of equations (§ 16) which arithmetically represent the pricing process one of our R is the quantity of available capital-disposal in the period in question, and one of our q is the price of it. This price is, therefore, settled like all other prices.

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* The best statistical data as to the fluctuations of the rate of interest are, perhaps, found in the returns of the insurance companies as to the average real interest obtained by them on their funds.

A special theory of interest cannot be anything but a careful study of the pricing process in respect of the price of capital-disposal. In this we have to consider demand and supply separately. In regard to the demand we have to find what external factors have an influence on it, and therefore indirectly on the interest, and how the price of capital-disposal—the interest itself—affects the demand. The available quantities of the various factors of production were taken for granted in our general treatment of the pricing problem. In the present book, however, we will drop this assumption, as we have said, and will ask whether, and to what extent, the supply of the factors of production is influenced by their prices. In the present chapter this shall be done as regards the supply of capital-disposal; in other words, this supply will be studied as a function of the rate of interest.

This study of the demand and supply of capital-disposal will show us why it is scarce, and to what extent this scarcity can be regarded as necessary. It will thus answer the question whether interest is merely an accidental phenomenon of our time or is a phenomenon based upon objective conditions, equally necessary at any future time and in any organisation of the economy. The theory of interest will not entirely have done its work until this much disputed question is answered. For that purpose we shall have to inquire what counteracting forces on the side of the demand and the supply would be provoked by a sharp fall of the rate of interest.

We shall find that these forces would very quickly put a limit to the fall of the rate. We shall further have to test to what extent an interest would have to be reckoned in a Socialist community, and so realise that the existence of interest is independent of any particular organisation of the economy.

Since interest is a price that is paid in money like any other price, its dimension is equal to M, the dimension of money. In the preceding section we found that the dimension of the disposal of capital is equal to the product MT, in which T indicates the dimension of time. The rate of interest indicates how much is paid per unit of the disposal of capital—say, for the disposal of a capital of a hundred pounds for a year—or, in other words, the ratio of the interest paid for the disposal of capital and the disposal itself. The dimension of the rate of interest is, therefore, equal to $\frac{M}{MT}=\frac{1}{T}$. Hence *the rate of interest is the reciprocal value of a time.* This thesis must not be looked upon as an unimportant result of a mathematical speculation. It is really very important in connection with the theory of interest, as it provides a clue to the deeper nature of the phenomenon of interest; elements of time must be essential determining factors of the rate of interest. The thesis is not unknown, in fact, to the popular mind. The common expression for interest as "so much per cent. a year" expresses the relation between an abstract number and a time, or the reciprocal value of a time. This character of the rate of interest is still clearer when we consider the price of a perpetual fixed rent. The price is a certain multiple of the rent, or the rent for a certain number of years, for a certain time. If we call this time t, and the fixed rent r, the price c of the rent is equal to tr. What interest does the purchaser of the rent pay for this amount of capital? The capital is c, the annual return r. The rate of interest is thus $\frac{r}{c}=\frac{1}{t}$. We see, therefore, that the interest is the reciprocal value of a time: namely, the reciprocal value of the number of years by which the annual rent is multiplied in calculating the purchase price. Hence the interest can just as well be determined by this number of years. In earlier times, when the purchase of rents was often the chief form of investment, this form was actually used in settling the interest. In England we still speak of so many " years purchase " in buying land, and of " years purchase of dividend " in the stock market. The sum that is paid for an absolutely durable good is not equal to the price of the annual use multiplied by an endless time, but corresponds to the use of it for a definite time. This time, which is the reciprocal value of the rate of interest, may be used just as well as the rate of interest to indicate the height of it. The thesis that the rate of interest is the reciprocal value of a time is put in its proper light by this observation.

In regard to the position of interest in pricing we have again to distinguish between the two main reasons of the need of a disposal of capital: that both the use of durable goods and production in the narrower sense take time. First, then, we have to consider the position of interest in the pricing of durable goods and their services.

Rent, in the widest sense of the word, is the price of the use of a durable good. The determining factors of this price will be more closely considered in the next chapter. But it is necessary to introduce the idea here, otherwise we cannot perfectly elucidate the rôle of interest in fixing prices. When we regard the price of the durable good itself in relation to the price of the use of it, we call the price of the good its " capital value." Here we come to that characteristic of durable goods which most clearly shows the necessity of separating them as a special category of economic goods: namely, that two prices must be taken into consideration in regard to them—the price of the article itself and the price of the use of it. When this is the case, it must clearly be a particular business to buy the article itself and sell the use of it. The ratio of the two prices must then be settled on the general rules of pricing. If, to simplify matters, we assume that handing over the use of it implies no other act except waiting, and that the durable good lasts for ever, then the one who acquires the good must have only the necessary disposal of capital, and need, therefore, only be indemnified for this service. In that case it is obvious that the price of the use must be equal to the interest of the purchase price of the good itself. In this case, therefore, there is a definite equation between capital value and rent; if c indicates the capital value, r the rent, and p the rate of interest, $r=pc$.

If the durable good does not last indefinitely, the rent must include a proportion for the depreciation of the capital. Frequently the rent also includes payment for special services of the landlord, such as lighting the stairs in a block of flats; but this is not rent in the scientific sense. Strictly speaking, the proportion for depreciation of capital is payment for part of the good itself, not rent, if we take it as net rent, or as the price that is paid for mere use, after striking off from the gross rent the cost of depreciation. This net rent, which may be conceived as the price of the use of a good that lasts for ever, will be the meaning of the word "rent" in what follows. Hence capital value and rent are connected with each other and with the rate of interest by the equation we have given.

It may be asked which of these three quantities is independent, and which depends upon the others. The answer differs according as the durable good is or is not reproducible.

If it is not reproducible, the cost of production cannot be the determining factor of price. Since, moreover, the demand of consumers in regard to a durable good is directed primarily to the use of it, not to the thing itself, there is no direct fixing of a price for it. The price of the use of it, on the other hand, is determined by the scarcity of it and the demand for it. The price must be high enough to adjust the demand to the available supply. Once the price of the use is thus settled, the price of the good itself is fixed by capitalising the rent according to the current rate of interest. As this capital value has no separate determining factor whatever, it cannot influence the rate of interest. Waiting for the utilities of the durable good requires a certain capital-disposal, it is true, but we have not here an independent source of the demand for capital-disposal. The required amount of command of capital is determined by the capital value, and this in turn by the rate of interest. The man who owns the good, *eo ipso* owns the capital that is necessary for waiting for the services of the good. If another buys it, it might seem as if he would withdraw so much capital-disposal from the market, as he ties up a certain amount in buying the good. We often find this view in the business world; for instance, that large sales of land make great demands on the capital market. This is, of course, wrong, for precisely the same amount of capital is freed for the vendor as the purchaser ties up. The capital-disposal that is tied up in the good is given in the capital value of it at the time. Hence the ownership of it makes no special demands on the market for capital-disposal, and so can have no influence on the rate of interest. This is true even when the article is the subject of a rise of price, an "unearned increment." The capital value of a non-reproducible durable good is an entirely subsidiary phenomenon of the pricing process.

It is otherwise in the case where the article is reproducible. The price of the object itself has then *one* determining factor—its cost of production. The price of its use has *one* determining factor; and in this case, when the existing quantity of the good is not given in advance, only one—the demand for the use of it. Neither of these factors is sufficient of itself to fix the price. In such circumstances a definite price can only be fixed when a connection is established between the price of the object and the price of the use of it. This is done by the intervention of the capitalist who buys the durable good in order to sell the services of it, or puts at the disposal of the employer sufficient command of capital for the purpose. This intervention implies a quite definite disposal of capital. The buyer of the object must, normally, pay the cost of its production. He must allow for interest on his money at the current rate, so that, in the total cost of supplying the use, the price of the use has a second determining factor. Thus the equation between capital value, interest, and rent provides the required connection between the price of the object and the price of its use, and the pricing problem is settled in the usual way. In this case, therefore, none of the three quantities—capital value, interest, and rent—is independent, and none determined by the others. They are all three equally unknown quantities of the pricing process, and are only determined by it, and all together.

The demands that are made on the market for capital-disposal in this case are settled by the cost of production of the object, which must in normal circumstances—when production is to continue in the same forms—be covered. These demands are new. The production of a new durable good entails a new burden on the capital market; a burden that must be met by a new formation of capital—in other words, by further saving. The demand for capital-disposal in order to wait for the services of reproducible durable goods thus represents an independent factor of the capital market, and one that must have an independent influence on the rate of interest. The capital value of the reproducible durable goods is, therefore, not merely the capitalised value of the rent, but has a special determining factor in the cost of production of the good, and it has an influence itself both on the rate of interest and the price of the use (or the rent).

The whole of this connection is seen most clearly when, as we have hitherto done, the services are regarded as the ultimate products; in other words, the waiting for the services is included in the productive process in the broader sense. The required capital-disposal is then seen to be a factor of production, and we have only to consider a single pricing process which settles the price of the disposal of capital in the same way as the prices of all other means of production, and embraces also the prices of the reproducible durable goods and the prices of their services. From this point of view, the cost of capital-disposal is seen to be on the same footing as the other costs of production, the services have definite costs of production, and the usual course of the pricing process, which adjusts the demand for finished articles to the available supply of the elementary factors of production, is restored.

In the *narrower sense* we call the price of the use of a non-reproducible durable good *rent*. This price, which, as we have shown, is directly determined by the relative scarcity of utilities of this kind, and therefore has a position in the pricing process quite independent of interest, must be made the subject of a special investigation, and we will devote a special chapter to it.

On the same footing as the " non-reproducible " in the arguments of this section are those goods which can be technically produced, but are not produced because of lack of demand or excessive cost of production.

§ 23. The Demand for Capital-Disposal.

Now that we have shown that the disposal of capital is a necessary condition of production in general, we must try to get some idea of the relative importance of this factor of production in the various branches of production. If we could assume that this importance were the same for all products, and that the price that would have to be paid for the disposal of capital was always proportional to the other costs of production, the interest would have no part in determining the relative prices of the products; we should have a pricing process in agreement with that of Ricardo (§ 31). But if the disposal of capital has a very different significance in different branches of production or for different products, the interest must, clearly, if it is to be paid at all, have a definite and positive effect on the relative prices of the various goods. Every rise or fall of the rate of interest must then entail an alteration of the relative prices of things; every change in the relative demand for the various goods must have a definite influence on the demand for capital-disposal, and therefore on the rate of interest. The disposal of capital is then in the same position as any other factor of production.

In order to orientate ourselves toward the first question, we have to work out the use of capital in various branches of production and compare it with the use of other factors of production. As a standard of the importance of these other factors of production we may take the total expenditure apart from the indemnification for the disposal of capital. We have then to compare the return on the capital employed with this expenditure in various businesses. There are some figures for making this comparison in an English Blue Book of 1891 dealing with the relation of wages to the cost of production.*
Using this material, we may draw up the following table:

Trade.	*Expenditure (in £1,000).*	*Capital (in Millions).*	*Capital per Pound of Expenses.*
Textile	25·6	0·017	⅔
Five coal companies	650	1·4	2
Gas (total)	11,262	60	5
Tramways	2,267	13·7	6
London and India Docks ..	1,188	16·1	14
Southampton Dock Co.	70	1·49	21
Sixteen railway companies ..	36,218	718	20
Eight water companies	661	14·6	22
Canal companies (not belonging to railways)	949	24·3	26
One of them	25·7	1·57	61

We see from this that the position of the disposal of capital is extraordinarily different in different trades. The highest of these figures is nearly a hundred times as large as the lowest. As there are certainly other trades with a relatively smaller capital than the textile trades, the range is probably still greater between the highest and lowest relative disposal of capital. Hence the burden of interest in the various trades is very unequal, and the height of the interest must in the long run—if it has had time—make itself felt in the provision for the various wants, and considerably influence the prices of the different material goods and services. We also see that the command of capital has by far the greatest importance in those trades in which there is a good deal of fixed capital, and less importance in the trades in which the capital is mainly circulating. This confirms the view already expressed, that the use of the durable products represents by far the most important source of the need of capital-disposal. The figures of capital-disposal quoted include, of course, the capital required for the ownership of land; but this source of error need not upset our results.

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* *Report to the Board of Trade on the Relation of Wages in Certain Industries to the Cost of Production* (C. 6535; 1891).

In this section, in which we are studying the demand for the disposal of capital, we will take the supply of it as a given quantity. Assuming, therefore, that a definite amount of capital-disposal is available, the price of it, the interest, has to restrict the demand to this given quantity. This is the principle of scarcity. The demand for the control of capital proceeds, as we have shown, from two main sources—the ownership of fixed capital and the ownership of circulating capital—and it is based upon the fact that the use of durable goods, as well as production in the narrower sense, takes time. To that extent the demand for capital-disposal depends upon the productive process; it is a demand for a factor of production. There is also, in point of fact, a demand for the disposal of capital for the purposes of consumption. This demand, which comes from individuals, who want to consume beyond their current income, can best be treated as a negative supply, and so need not be considered in this connection (see § 24). We may, therefore, here confine ourselves to the demand on the side of production, and first consider the demand for capital-disposal for the use of durable goods. This demand, of course, comes in the ultimate analysis from men's immediate wants, and therefore partly from the demand for the direct services of durable goods and partly from the demand for the material products that are made with the help of the services of durable goods. Thus the object of interest in this sphere is to check the demand for the services of durable goods, whether these services are required for the immediate satisfaction of wants or for the antecedent process of production.

Hence a rise of the rate of interest must be caused by any development of the demand that makes specially large claims upon the durable goods. This was fully confirmed in the nineteenth century, as every period of intenser railway construction than usual sent up the rate of interest considerably. The rises of the rate which occurred at the end of the last century, and twice in this century before the War, were probably due in a great measure to the large development of the electrical industry, in the ultimate analysis to the demand for electric trams, lighting, telephones, etc.—that is to say, for very costly durable goods. On all such occasions the real scarcity of the command of capital has made itself acutely felt. The movements of the economic life connected therewith will be studied in the last Book.

The rise of the rate of interest, of which business men complain so much, and politicians ascribe to all sorts of mishaps, has a quite definite and very important economic work to do. There has to be a selection amongst the various desires that make demands upon the disposal of capital. Only the most important can be satisfied, and the others must, at least for a time, be cut off. Which are the most important has to be decided on the general rules of the economy; the most important are those that pay best—in this case, those that can bear the highest rate of interest. Without this regulation of the demand the whole social economy would get into an impossible position. After such a triumph of industry as the electric tramway, naturally, all the towns in the world want to be fitted up with this convenience as speedily as possible. To attempt to satisfy all these requirements more or less at the same time and perfectly would absorb the productive forces quite disproportionately in meeting this demand, and would throw the whole system into disorder. This can only be prevented by increasing the rate of interest, so as to increase considerably the expense of the utilities of the durable goods in question.

If we would study more closely the demand for the disposal of capital, we must investigate the various external factors which influence this demand. On the other hand, we must remember that the demand is a function of the price, and therefore of the rate of interest. We cannot be content with a study of the demand at a certain rate of interest. We must take as the subject of our inquiry the demand in its dependence upon the fluctuations of the rate of interest. The demand itself is, as we found (§§ 11 and 16), not a given determining factor of the price. The real factors must be sought in the way in which the demand depends upon the price.

Of the external factors which influence the demand for capital-disposal the first to be considered is the growth of population. If this is to take place without injurious effect upon the economic situation, it is clear that the volume of durable goods must increase in the same proportion as the population. Every new family that comes along wants a new house, with streets, water supply, drainage, light, etc. Moreover, the increase of population also requires a corresponding increase of the agricultural buildings and equipment, factories, means of transport, and so on. In the evenly progressive economy (§ 6) there must be a constant formation of capital. The economy cannot use up the whole of its income. It must use a certain proportion of it for the augmentation of real capital. Thus the increase of population of itself makes demands upon the disposal of capital. A community with an increasing population has, precisely on account of this movement, a more acute need of the command of capital than a similar community with a stationary population. Hence the rate of interest must, as far as the effect of this circumstance is felt, be higher in the former than in the latter economy. From this point of view a comparison between Germany and France before the War is particularly instructive.

Progress, however, does not merely consist in an increase of population. It means a better satisfaction of wants, and this requires above all things an increase of durable material goods, or of fixed real capital. It is remarkable to what an extent industrial progress depends upon an ever-widening use of fixed real capital. The greatest achievements of modern industry have, as a rule, made quite extraordinary demands upon the embodiment of capital in fixed installations, buildings, etc. The development still continues in the same direction, and will in all probability continue to do so. These achievements, moreover, have by no means been supplied in anything like the same proportion to all men. In this respect there are still great inequalities between the different social classes and different countries. The building of more or less satisfactory houses for the mass of the people in countries with cold climates will yet make enormous demands upon the disposal of capital. Our older European countries are now fairly well provided with great means of transport and other installations that require a good deal of fixed real capital. But before all other countries—South America, Africa, China, etc.—can have them to the same extent, capital will have to be created in a measure that almost passes imagination.

There is, therefore, still a very broad margin for a progress that will require a very extensive use of durable material goods.* The constantly increasing demand for capital-disposal for the purpose of utilising durable goods is based upon this advance, and it is therefore intimately connected with deep-rooted characteristics of modern life.

How is this demand to be kept within the necessary limits? By having to pay a price-interest for the disposal of capital. The need to pay interest at a certain rate will always cut off a number of possibilities of satisfying human wants by the use of durable goods. The demand for capital-disposal is thus greatly compressed. It has considerable elasticity. There is, so to say, a fund of latent possibilities of useful applications of capital-disposal in the way of utilising durable goods. As soon as the rate of interest falls a little, a certain part of this fund is set free; the possibilities in question are realised. Any further reduction of the rate sets free to the same extent an increasing amount of profitable applications of capital. Even a slight reduction suffices, as a rule, to set free possibilities of the profitable use of durable goods to such an extent that the consequent demands for a disposal of capital completely exhaust the supply, and so prevent any further fall of the rate. A further fall would meet still stronger counteracting forces. To this fund of possible uses of capital additions are constantly being made by inventions, the opening up of new countries, the increase of population, and so on. The fund is, therefore, thanks to progress in the broadest sense of the word, practically inexhaustible.

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* As to the forces that are at work in this direction and certain antagonistic, but decidedly weaker, tendencies, see further details in *The Nature and Necessity of Interest* (pp. 96-106).

The rate of interest is, as everybody knows, by no means uniform in different parts of the world. In the older, politically and economically better-ordered, countries of Europe it is relatively low. In countries of dubious political stability, such as the Near and Far East, or in colonies where there is still a frightful amount of economic insecurity, capital is often unobtainable, and is in any case only obtainable on very difficult conditions, or at a high rate of interest. Where this is the case, a far higher proportion of the chances of a profitable use of durable goods are cut off and the demand for the command of capital is very greatly compressed. Every reduction of the rate of interest in such countries will, therefore, cause a very considerable new demand for the disposal of capital. With the advance of civilisation, however, there is a gradual softening of these pronounced differences of the capital market in different countries. The movement has become very remarkable in the present century. But every reduction of the rate of interest on foreign markets means so greatly increased a demand for the control of capital that the European market is bound to take notice of it. The consequence is seen in a distinct advance of the European rate of interest, the older States of Europe, which were formerly the best placed for receiving money, being the most to suffer. The pronounced reaction of the rate of European State-loans in the period 1900-13 is certainly, to a great extent, due to the pressure of these circumstances. This is the best evidence of the enormous extent of the unsatisfied, or not yet satisfied, demand for capital-disposal on the part of the broad world outside the great financial centres, and at the same time of the real scarcity of the command of capital. As the equalising movement to which we referred is only now beginning, we may count upon a continuation of it. But if the capital-demands of the rest of the world can no longer be restricted by much higher rates of interest than those current in Europe, we cannot expect any progressive reduction of these.

Europe has to some extent satisfied its need of railways. We must remember, however, that this was generally (though by no means always) done on the condition that the railways would pay an interest of 3½ to 4 per cent. If capital for railways were available at 2 per cent., we should soon see what a number of important lines have not yet been constructed! This applies, also, of course, to light railways and tramways. What enormous sums would be asked for these purposes at 2 per cent.! Moreover, other enterprises, in which a good deal of capital is already embodied, such as canals, harbours, hydraulic power stations, water, gas, and electricity works, sewage works, etc., would make new and impossible demands on capital. In fact, a rate of interest about half what it now is normally would have a very great influence on industry. It must never be forgotten that the whole of modern industry is constructed on the supposition that an interest of at least 4 per cent. has to be paid. If 2 per cent. could be taken instead, industry would undoubtedly enter upon lines of development which are at present closed, and would make great demands upon capital-disposal.

We have only to reflect a little on these things to see the great force of the demand for the control of capital in order to utilise durable goods, and the enormous reserves of as yet unsatisfied, but latent, demands behind those that are actually met. Any man who has realised this has obtained a certain insight into the necessity of interest. There can be no question of simply opening the door to all these demands. If people had only reflected a little in this connection, no one would ever have ventured to speak seriously of a possible disappearance of interest. If the rate of interest were zero, the sheer use of durable goods would be available for nothing: that is to say, maintenance and renewals would have to be paid for, but the use as such would be a free good. But in virtue of the principle of scarcity, which is fundamental to every economy, this is only possible for goods of which there is a surplus.

If the disposal of capital were to be had free, and there was no need to bother about economising with it, there would be no limit to the demand for it. The demand for durable goods would rise indefinitely. The original costs of installation would have to mean nothing, as they would not need to have interest paid on them. In such circumstances fantastic enterprises would seem remunerative, and would require the incorporation of enormous sums. It is clear that this would put the whole economy on false lines. If unlimited amounts of productive forces could be used for making very durable structures, they would have to be withdrawn to a great extent from the current satisfaction of wants, and the community would find itself reduced to a condition in which men would, with immense efforts and in great contemporary privation, raise Egyptian pyramids for the edification of future ages.

A reader with an eye for the realities of the economic life may think it superfluous to linger over so purely hypothetical a situation. That would be true if a denial of the necessity of interest did not occupy so prominent a position in certain economic and social programs, and did not occasionally find support even on the side of science.

So far our explanation of the necessity of interest has been based entirely upon the principle of scarcity. It must, however, be borne in mind that a given aim of production can often be attained by varying degrees of use of durable goods: in other words, that the want of capital-disposal is not entirely determined by the demand of consumers, but depends to some extent upon the choice of ways of production. The command of capital can, in point of fact, as was pointed out in § 21, in certain cases and to a certain extent be substituted for other means of production. We have to study this substitution and particularly the significance of the rate of interest itself in that respect. It is only in this way that we can get a complete insight into the way in which the demand for capital-disposal depends upon the rate of interest.

Capital-disposal can be substituted, not only for labour, but also for the use of the land and the raw materials of nature. When, for instance, the land is so dear that it is cheaper to build an underground railway than purchase land on the surface, there is a real substitution of capital-disposal for land-disposal. If we suppose that the annual cost of maintenance and renewals is the same for the two alternative lines, clearly the ground rent that would have to be paid for the upper line is replaced by the interest on the extra capital needed for making the underground line; for the use of the land is substituted a certain amount of capital-disposal. If, on the other hand, the underground line is preferred in a district where the price of the land is of no consequence, because the cost of traffic on this line will be cheaper on account of the saving in coal and time, other things being equal, the choice of the underground line means a substitution of capital-disposal for all the factors of production which have a part in the extra cost of traffic on the other line, materials, such as coal, labour of the staff, etc.

To what extent capital-disposal should thus be substituted for other factors of production naturally depends, in the first place, upon the price of the capital-disposal. The lower the rate of interest is, the better the capital-disposal is able to displace rival factors of production. In the case already considered a high rate of interest will probably make the underground line impossible, whereas a low rate of interest may put its advantages beyond question. As the interest on the installation-capital represents the greater part of the annual cost of the underground railway, a fall of the rate by one-half will, of course, materially reduce this cost, and so greatly increase the competitive power of the underground line. In many cases the durable installation may be carried out in various degrees of solidity. What degree is economically to be given to the enterprise will depend upon the rate of interest.

The modern economic life exhibits certain general tendencies which favour the progressive substitution of capital-disposal for other factors of production. First of these is the progress of industry, which undoubtedly is for the most part in the direction of a more extensive use of fixed real capital. The greatest triumphs of industry in the last century show this character very clearly. We have only to think of the railways, the modern ocean liners, the great canals for world-trade, the latest developments in the use of water-power, the use of gas and electricity for lighting and heating, the other applications of electricity, etc., and the increasing displacement of manual labour by more or less automatic machinery which characterises the whole of modern industry, to see very clearly the overwhelming significance of this tendency. Advances in the opposite direction, such as, perhaps, wireless telegraphy, are clearly exceptions to the rule.

In the next case, we have to consider the general economic movement towards concentration. The economic possibility of using durable means of production obviously depends upon the capacity of the producer to use to the full the services of the durable means of production. This capacity is always greater in a large than in a small business; though small businesses may improve their percentage of utilisation by co-operation. Hence the advances of large businesses and of amalgamation mean an increased use of durable means of production, and therefore an increased demand for the control of capital.

In these economic efforts at concentration there is undoubtedly a tendency towards the more extensive use of durable means of production. On the other hand, however, the progressive concentration in certain medium-sized businesses can improve the use of the existing means of production (such as machinery), and so reduce the relative demand for them. Other businesses, however, are beginning to use machinery, and it is doubtful whether the group of businesses that use machinery, but incompletely, will be reduced by this movement. Taking production as a whole, therefore, the concentrating movement means an increased demand for the durable means of production.

In the third place, the attempts to organise credit, which provide artisans and small farmers with capital to buy machinery, animals, etc., work in the same direction. There is certainly in the occupations in question plenty of room for a remunerative application of fixed real capital. A movement that promotes the exploitation of these possibilities must obviously lead also to an increase of the demand for capital-disposal.

Fourthly, it is a very general fact that machines and equipment that could certainly yield a good return are not used simply because there are certain difficulties about finding capital, or because those who control production are not sufficiently attentive to the progress of industrial science or do not possess knowledge enough to understand properly the technical-economic conditions of their own business. It is easy to see that this "friction" of the economic life is still considerable. We must, however, suppose that it is diminishing, and that the tendency of the general development is to use the durable means of production increasingly wherever it is profitable. To that extent it is another tendency strengthening the demand for capital-disposal.

To what extent these tendencies really make themselves felt in greater demands for capital-disposal for the use of durable means of production depends in a certain measure upon the rate of interest. An increase of the demand is generally met by an increase in the rate. However, in conjunction with the tendencies of consumption which we have previously discussed, these tendencies will prevent a progressive fall of the rate of interest.

The question whether a labour-saving machine shall be introduced into a particular factory or not depends in certain circumstances upon the rate of wage. A rise of wages in that business may settle the question in favour of the machine. It is clear, however, that advances of wages, within certain customary limits, have in an individual business much less influence on the competition of machinery than the factors given here. An enlargement of the business such as occurs daily, for instance, has much more influence in this respect. And what applies to wage-movements in this connection must generally apply also to the ordinary fluctuations of the rate of interest. Hence the competition of machinery and manual labour cannot simply be treated as a pricing problem to be solved according to the principle of substitution. What we have said applies, of course, still more to the general problem of the substitution of capital-disposal for other factors of production. The conditions of competition of the great transport businesses and other large installations of modern industry are by no means entirely to be considered a question of the relative cost of different methods of production.

If any one dreams of being able to deal with the whole theory of interest from the special point of view of the principle of substitution—if he finds an exhaustive solution of the problem of interest in the cheap formula that the interest is equal to the marginal productivity of the capital-disposal in competition with other factors of production—he overlooks entirely the fundamental importance of the principle of scarcity in connection with the problem of interest and every other pricing problem. The general explanation of interest must always be sought in the relative scarcity of the available capital-disposal in proportion to the demand for it. The principle of substitution has a subordinate position. It means only that this demand is not wholly determined by the requirements of consumers, but is to a certain extent influenced also by the conditions of production.

Up to the present we have only considered the want of capital-disposal for the utilisation of durable goods. But capital-disposal is, as we have seen, also required because production in the narrower sense of the word takes time. The capital thus required corresponds to the circulating real capital of the economy. As regards the durable goods, we in this connection reckon production only as far as the completion of the durable good, and do not include the utilisation of it. The amount of the capital-disposal required for production then depends essentially upon the extension in time of the productive process.

The demand for capital-disposal thus determined is, of course, added to the demand (for the utilisation of durable goods) which we have considered, but is very much smaller than this. This gives the total demand for the disposal of capital.

What factors determine the demand for capital-disposal for production in the narrower sense? What are the tendencies that make themselves felt in regard to this demand? In this respect we must observe, first, that the rate of interest itself is probably in most cases of secondary importance in fixing the duration of the productive process. It is only to be assumed in exceptional cases that a reduction of the rate of interest would lead to a lengthening of the productive process.

Quite apart from the actual rate of interest, however, the modern economy has a distinct tendency to shorten the process of production as far as possible. In this there is, of course, a wish to save interest on the circulating real capital, but it is not the only, and perhaps not the chief, motive. This point of view is of real importance in the building trade, in which a particularly large amount of capital is tied up until the house is finished. Private builders therefore try to cut the time as short as possible. In public enterprise of this class the fact has not been sufficiently realised that the actual cost of building includes the interest that runs during the time of construction. It is customary merely to sum up the payments made at various times, and this, naturally, easily lends to an uneconomical lengthening of the time of construction.

The chief impulse in the modern movement for shortening the period of production is, however, the desire to utilise as fully as possible the means of production employed in the productive process. Railway directors run their goods trains more rapidly only in order to keep the line free for other trains. Loading and unloading at the docks are speeded up as far as possible with the most modern machinery mainly in order to make as much profit as possible out of the ships' time. We find everywhere in the factory and transport worlds this attempt to make human labour as effective as possible by speeding up production. In many cases there are other special motives for shortening the process of production.*

It is obvious that shortening the productive process means of itself a reduction of the need of capital-disposal for the purpose of production. But, from the nature of the case, this tendency is very restricted. The possibilities of such production are in many trades already almost exploited to the limit. For the increase of the demand for capital-disposal for the utilisation of durable goods, on the other hand, we can see no other limits than those fixed by the need to pay interest. Since, moreover, the demand for the purpose of production is a relatively small part of the total demand, the tendency to a rise must, on the whole, greatly predominate.

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* For further details as to this tendency to shorten production see *The Nature and Necessity of Interest* (pp. 125-7).

This describes the demand sufficiently for our purpose. It has such force that it can only be restrained within the requisite limits by putting a price on the disposal of capital. Every reduction of this price has a tendency to set free reserves of the demand, and this prevents a further fall of the price. This is the general fact which determines the price of capital-disposal, or the interest, on the side of the demand.

§ 24. The Supply of the Disposal of Capital.

The capital available in the economy can only be augmented by saving. The nature of this saving has already been described (§§ 6 and 22). The total income of the economy is divided into two parts. One is consumed—that is, real income is bought with it, and this passes into consumption. The other part is " saved." This part is, however, used directly for the purchase of real capital, and so it forms the new supply of capital-disposal.

The sum of the savings of individuals is, as a rule, larger than this saved part, in the objective sense, of the total social income. Certain persons use in a given period an amount that exceeds their income for that time. This conduct —" overconsumption," we may call it — is the opposite of saving. It is possible from the individual's standpoint partly by the consumption of one's own capital, partly by loans, which must be repaid out of further income. In the first case part of the capital is exchanged for the saved income of other individuals, and this income is what is really consumed. In the second case the income is obtained by a promise of future payment. Any such consumption beyond one's income must be deducted from the savings of that period; the remainder alone represents the net sum of the savings of the economy in the period, or the real increase of the capital-disposal available for acquiring real capital. These net savings are in the objective sense the savings of the economy as a whole, and they therefore represent the increase of its real capital in the period. In the preceding section, where we considered the demand for capital-disposal, we took account only of that demand which comes from the productive process in the broader sense. Now that we have to study the supply, we must, consistently, consider this only in so far as it is to the advantage of the productive process in the same broad sense: that is to say, in so far as it is put at the disposal of the owners of real capital. By " supply of capital-disposal," therefore, we understand the sum of the net savings. In studying the factors which determine the supply of it, this fact must be kept in mind; and the determining factors of overconsumption also must be taken into account.

In the First Book we took for granted the quantities of the available elementary means of production, as given factors of the pricing problem. As in the present Book, in which we inquire into the pricing of the factors of production, we drop this assumption, and we include in the sphere of our inquiry the effect of the prices of these factors of production upon the demand for them, we at once face the question what significance the rate of interest has for the supply of capital-disposal. We shall, therefore, have to study thoroughly, not only the independent factors—external from the point of view of pricing—which determine the degree of saving, but particularly the influence of the price of capital-disposal (the rate of interest) upon these factors, and consequently upon the degree of saving.

We ascertain the external factors best by analysing the impulses which govern saving or its antithesis, overconsumption. We must first observe that overconsumption and saving are often only two sides—more accurately, two stages—of a single plan of economy. This is the case when a man puts aside part of an unusually good income with the intention of helping out his income in poorer years to come; or, *vice versa*, when a man who has not accumulated this sort of insurance fund has to borrow money in a bad year which he will gradually repay in better years. It is also the case when a young father of a family withdraws a little from his income in order to pay the cost of educating his children later; or, conversely, when a youth borrows money for his studies, and intends to pay it back when he has secured a good position. The relation between need and means to cover it differs a good deal at different periods of the individual's life. This inequality of means can, however, be overcome by a proper arrangement of saving and overconsumption. Which of these is to go first in point of time must depend upon circumstances. If saving comes first, a certain control of capital is put on the market for some length of time. If overconsumption is first, a certain control of capital is required for some length of time.

A combination of saving and subsequent consumption of savings, which plays a considerable part in practical life, is represented by the reserves which are set aside very commonly in the modern world to secure a pension: either a pension for the saver himself at a certain age, or in case of illness, or a sum to be left to his dependents. Most employees now contribute, voluntarily or compulsorily, to insurance-funds. A good deal of our life-insurance is of the same character. The whole modern social insurance is a compulsory saving from relatively good incomes to cover wants in time of need. The converse economic tendency—consumption beyond one's income to be paid for later—is, however, not without its representatives. We are not thinking merely of the light-hearted spending of borrowed money by youths with good expectations. The education of the young is a general and quite justified overconsumption, which will be paid for later out of savings. The States which borrow money for current purposes are representatives of overconsumption on the large scale. It might be thought that States might incur the same expenditure by raising taxation, but this is often very doubtful. If there were no loans to be had, the expenditure of the State would be greatly curtailed; or, at all events, the expenditure of its people, burdened with heavy taxes, would be smaller. Hence covering current expenses by raising State-loans certainly increases consumption, and consequently reduces the savings of the community. It has, therefore, just the same effect as overconsumption on the part of an individual. The repayment of these State-loans naturally curtails the consumptive powers of the taxpayers, but at the same time it releases resources for the formation of new capital.

The most general reason for saving is undoubtedly the feeling that it is necessary to provide for one's future. It must, therefore, seem very desirable in the purely consumptive economy to set aside, for times when the income is bad, means to cover the ordinary, or at least the most urgent, wants. We have to look to, not only the general insecurity of the economic life, but to old age and, to a certain extent, to those we leave behind. But this eagerness to save, in order to provide for the future, is necessarily restricted. An increase in saving in the modern community, on the ground of a better provision for the future, can only be expected in so far as the saving habits of the upper classes spread into the lower. This will certainly be a very slow process. For a long time yet, probably, every increase of the income of the lower classes will be used for the most part in an improvement of their condition.

Besides this purely personal concern about the future, which leads the consumptive economy to save, there is a concern for the development of the productive industry, the enterprise; and this leads to setting aside quite a large part of the returns in favour of the business. These sums are primarily intended as reserves against unforeseen accidents, but they also serve to a great extent to promote and economically strengthen the business.

In both cases they are generally used as capital in the business in question; though sometimes, for greater security, the reserves are invested or deposited in banks. The formation of capital in this way is an economic necessity in modern conditions. In the competition of employers the man who cannot take his part in the advance movement, which requires more and more capital, must go under. And to augment the capital the returns of the business must often be used primarily. Only in so far as this is done will it be possible to attract further outside capital. That occasional profits, or the extra profits of very good years, should not be consumed, but reserved in the business, is a platitude in sound business circles. We see this best in well-managed limited companies. In these it is the custom to create funds for equalising the dividend, and, as long as they belong to the company, they naturally strengthen the business.

This building up of capital in the productive trades is a most important element of the provision of capital in the modern community. It is, of course, not restricted in the same way as the private formation of capital to which we referred. But as it is due to the needs of production, and is directly taken up by production, there is no reason to fear that it could be carried so far that the capital-disposal thus created would not find a customer.

Finally, there is a formation of capital for which it is hardly possible to assign any concern about the future as motive. It cannot be said of the leading capitalists who satisfy all their wants of any consequence, and have a capital the returns on which guarantee this satisfaction of wants for all time to them and their families, yet constantly set aside large sums to increase their wealth, that they save out of concern about the future. In these cases there must be some other motive. It is the economic interest of the capitalist to increase his wealth, and this in time becomes an end in itself. The motives that are at work are numerous. The senseless cupidity that in time finds its sole pleasure in contemplating the growth of its wealth, and may very well be described as an abnormal sluggishness of spirit and a pathological impoverishment of the emotional life, is certainly not the sole explanation. The desire of splendour and of the higher position in society which the possession of great wealth assures, the stimulation of jealousy of other men, the healthy joy of the strong man in successful work as such, in ruling large masses, in influence especially—these are all factors that have to be taken into account.

This craving to increase one's wealth is insatiable, as no wealth is great enough to satisfy it. But the building up of capital in this way is restricted in other directions: first by the income of the relevant classes, and secondly by their consumption. The increasing luxury of the rich makes their life dearer and dearer, and it proportionately lessens their chances of saving. Still, the degree of saving, the ratio of savings and total income, will be considerably higher in the wealthy classes than in the others; and the absolute amount of their savings will always form a very important part of the total formation of capital in the community. Hence the building up of capital as a whole depends in a measure upon the distribution of income in the community. A more democratic distribution would materially lower the degree of saving of the community. Particularly would this be the case if the increase of income were predominantly on the side of the working class. The recent development of taxation of incomes and wealth in the direction of more and more pronounced graduation undoubtedly means a very considerable decay of the formation of capital in modern life.

What we have said shows that at all events there is no reason to assume a steadily increasing amount of savings in proportion to income in a modern community. The fairly common view, even found in scientific literature, that the formation of capital in modern life is so great that sooner or later it is sure to exceed the demand, is not supported by a careful analysis of the actual facts. Absolutely, of course, the annual formation of capital increases; but, in all probability, not more quickly than income, and therefore not more quickly than production and the demands which it makes upon the disposal of capital.

If we ask what influence the rate of interest has on the formation of capital, we find that as a rule it is assumed *a priori* that saving is a sacrifice that must be paid for at a certain price so that it will be done to a certain extent, and that the supply of this sacrifice—the building up of capital—always increases with the price (the rate of interest) paid for it; and that, conversely, every fall of the rate of interest must lessen the formation of capital. On the whole, perhaps, this assumption is in harmony, approximately, with the facts. More careful consideration of the question, however, shows that the effects of fluctuations in the rate of interest are not always the same; that a fall of the rate, if it keeps within the ordinary limits of fluctuation, may influence the formation of capital in opposite directions according to the circumstances.

The usual saver with a middle-class income who is anxious to build up a capital in order to live on the returns of it has to get together, at a low rate of interest, a large capital to secure a certain annual return. Hence it is possible that a fall of the rate may stimulate him to greater exertions and cause him to build up more capital. It is also possible, however, that the amount which the saver is prepared to put by is tolerably fixed, and that, if the rate is low, he will have to be content with a lower annual return in the future. We must also remember that a saver who might get together at a higher rate of interest a capital the return on which might be enough to meet his year's requirements, may not be able to continue this at a lower rate of interest, but has to choose the easier way of providing for his future—buy an insurance pension. Such a change is not good for the capital market, and, if it occurs on a large scale, it must in the course of time greatly reduce the supply of capital-disposal. That occasional large profits are not consumed there and then, but added to one's wealth, is a phenomenon on which the rate of interest ought not to have much influence. The same must be said of an occasional need to use up a part of one's wealth. Nor should the rate of interest have any particular influence on the reserves against unforeseen accidents and the consumption of capital in such cases. On the other hand, we ought, perhaps to assume that a high rate of interest rather checks the anticipatory use of an income expected in the future, while a low rate of interest makes one think less of such use. Even ministers of finance could hardly escape that influence.

As regards the building up of capital in productive businesses, a fall of the rate of interest should not have a consistent effect. But as such businesses are generally large debtors, a lower rate means a larger profit to them, and therefore an opportunity to build up further capital. Such opportunities have a not inconsiderable place in the formation of capital in a modern economy. We must assume on the other hand, however, that a fall in the rate prejudices the building up of capital by the big capitalists, as it reduces their income. A low rate does not at once have its full effect on the income of the capitalists. Most of their actual income consists of fixed returns (State-bonds, ground rents, etc.) and of dividends that are largely of the same nature. To some extent, however, the income of capitalists consists of interest on a capital that is invested over and over again, and it must therefore fall proportionally with the rate. This is mostly the case with the income from the newly formed capital. Gradually, therefore, a prolonged fall of the rate of interest must have an effective influence on the building up of capital by the capitalist class. Small capitalists, who consume the whole of their income, are merely compelled to cut down their consumption when the rate of interest falls.

If we try to form some idea of the consequences of these different effects of a fall of the rate, we conclude that, as long as the rate merely fluctuates within its ordinary limits, the effect of its changes on the building up of capital as a whole should not be very pronounced; though we may assume that a permanently low rate on the whole rather restricts the formation of capital.

From this we see how right it is to regard the supply of capital-disposal as a given quantity in a preliminary survey of the general problem of pricing, and trace interest primarily to the need to check the demand. In a modern country with perfect legal security and advanced methods of business the actual fluctuations of the rate of interest are so predominantly determined by the demand for capital-disposal that the influence of any change in the supply is of subsidiary importance, and it need only be taken into account in the second place —in a special and detailed analysis. Even if the dependence of the supply of capital-disposal could be regarded as an absolutely established fact, it is not of primary importance in connection with the explanation of the mechanism of pricing. The pricing would be explained all the same, and substantially within the same lines and with the same quantitative result, if there were no such dependence, but the supply of capital-disposal were a given quantity of the problem, independent of the ordinary fluctuations of the rate of interest.*

This relative independence of the formation of capital in regard to the rate of interest holds good, as we said, as long as the rate fluctuates within the ordinary limits of the actual economic life. It is quite otherwise if the rate were to fall much below the usual minimum—say, much below 3 per cent. A careful analysis of this contingency is very important in connection with the theory of interest. If it is the object of the theory, not only to explain the actual movements of the rate, but also to inquire why, and to what extent, interest is a necessary phenomenon of the economic life, it must answer the question, what would be the consequences if the rate of interest fell below its usual level and approached zero. It is only in this way that we can learn why the rate of interest remains about the actual and arithmetically determined level—say, between 3 and 5 per cent.—and it is only by answering this question, not by loose qualitative reflections on the nature of interest, that we get a complete theory of interest.

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* *Cf.* Marshall, *Principles*, Book V., ch. iii., § 2; and Book VI., ch. ii., § 4

A fall of the rate much below the hitherto customary lower limit would lead to a general consumption of savings. Further, provision for the future would, to a greater extent than before, take the shape of buying annuities instead of building up capital with a proportionate annual return. Since, however, these consequences may be regarded from the point of view of a consumption of savings, we may be content with an analysis of the influence of the rate of interest on the consumption of capital. We shall find that the effects of a fall of the rate from the level we indicated are bound to be serious for the capital market.

Let us take a capitalist who lives entirely on the interest of his capital. If he has £100,000, and has up to that time had 4 per cent. on it, or £4,000, and has adjusted his standard of living to that income, he will probably, when the rate falls to $3\frac{1}{2}$ per cent., cut off some of his ordinary expenditure and restrict his budget to the still respectable figure of £3,500. He would, perhaps, think it possible to economise further, if the rate fell to 3 per cent. But if we suppose that the rate fell to $\frac{1}{2}$ per cent., our capitalist would regard the reduction of his annual income as intolerable, and he would prefer to consume his capital gradually rather than live on £500 a year. If he reckons that he still has twenty-five years to live, he can in this way enjoy his original income of £4,000. If he wants to provide for his children, he will, perhaps, find a period of fifty years sufficient, and consume his income in that period, at the rate of $\frac{1}{50}$ a year. That will give him a yearly income—not counting interest—of £2,000.

This simple example shows us the basis of the question, whether a man who lives on interest, and consumes the whole of it, will also consume his capital if the rate of interest falls. The decisive point is, clearly, the relative increase of income that he gets by choosing the latter method. This proportion of increase obviously becomes very much larger when the rate of interest falls below its usual level. It also depends materially on the length of the period during which his capital must last. The shorter the period, the more he gets by consuming his capital. That is the reason why, at the actual rate of interest, a good deal of capital is consumed by the purchase of annuities by elderly people of small means. They get a considerable increase of income by consuming their capital.

This relative increase of income by consuming capital thus varies with the rate of interest and with the length of the period of consumption.* Whether the capital is consumed also depends, to some extent, upon the absolute amount of the annual income that can be got by simple interest on capital. Very rich people could probably sustain a low rate of interest longer without drawing upon their capital. We see to-day that annuities are generally chosen by people of relatively small means. But if the rate falls sufficiently, the returns must greatly inconvenience even the large capitalists, and they will regard the consumption of their capital as the only way out of the difficulty.

A general spread of the custom of using up capital in this way would clearly reduce the supply of capital-disposal so much that any further fall in the rate of interest would be prevented by the acute stringency of capital. The reaction would be felt most severely if the rate fell to such a level that the great majority of capitalists would be able by consuming their capital to more than double their annual income.

Every prolongation of the period of consumption is, of course, a counteracting element to the consumption of capital. If the average length of human life were greatly increased, the rate of interest could fall much lower than is possible on the actual average length. If we imagine men living hundreds of years, there would be no question of any extensive consumption of capital until the rate fell to a fraction of 1 per cent. From this point of view there would be nothing to prevent a reckoning of interest in so much per mille instead of, as now, so much per cent. This brings out very clearly how the rate of interest depends upon the duration of human life.

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* For certain calculations in connection with this, see *The Nature and Necessity of Interest*, p. 148 and foll.

In order to realise this better, we must remember that an augmentation of income by the use of capital is most reasonably done by an annuity. The advantage of using up one's capital is then greater than if, as we did above, we take the period of consumption as fixed in advance. The following table shows the proportion of the annuity that can be bought at different ages with a given capital and the perpetual return that one gets by putting out the capital at interest.

From this table we see that the advantage of using up capital, which is not great for middle-aged people when the rate of interest is high, becomes greater as the rate falls, and is a matter of consideration even for younger people. If we suppose that the possibility of doubling one's income by buying an annuity means the consumption of capital to a certain extent, this consumption of capital will begin at 60 years when the rate is 6 per cent., at 50 years when the rate is 4 per cent., at 40 years when the rate is 2½ per cent., at 30 when the rate is 2 per cent., and at 10—practically, for everybody—when the rate is 1½.

Age at Purchase of Annuity.	*Interest.*										
	1	1½	2	2½	3	3½	4	5	6	7	8
10	2·74	2·06	1·74	1·55	1·43	1·34	1·28	1·18	1·16	1·13	1·11
20	3·09	2·29	1·90	1·68	1·53	1·43	1·35	1·26	1·20	1·17	1·13
30	3·59	2·62	2·15	1·87	1·69	1·56	1·47	1·34	1·26	1·21	1·18
40	4·39	3·15	2·55	2·19	1·95	1·78	1·65	1·49	1·38	1·31	1·26
50	5·76	4·07	3·24	2·74	2·41	2·18	2·00	1·77	1·61	1·50	1·42
60	8·27	5·77	4·52	3·77	3·27	2·92	2·66	2·29	2·04	1·88	1·75

Trebling the income will be possible under 60 years when the rate is 3 per cent., at 55 years when the rate is 2½ per cent., at 50 when the rate is 2 per cent., and at less than 40 when the rate is 1½. Trebling one's income would undoubtedly prove a very strong incentive to the majority of capitalists to use up their capital, especially if their ordinary income were reduced by a fall of the rate to a fraction of what it had been.

At what age, in modern conditions, do we find the most wealth? In connection with this interesting question we have an instructive statistical inquiry of the Swedish Ministry of Finance as regards hereditary wealth.* Although the absolute figures in these statistics are not very reliable, the estimates of the relative distribution of wealth according to age probably accord with the facts as accurately as our purpose requires. It is clear from this material that in the towns rather more than half the wealth is in the hands of people over sixty, and in the country of people over fifty. One can calculate approximately that, taking both together, people over fifty-five own more than half the wealth. People over forty have not less than 89·5 per cent. of the total wealth in the towns and 72·5 per cent. in the country.

From this we may conclude that a rate of interest that offers people over fifty a strong incentive to consume their capital would greatly reduce the total supply of capital, and that a rate of interest that would lead people of forty to use up their capital must be a very serious matter for the conservation of the social capital. When the rate is 2½, income can be increased by the considerable multiple of 2·7 by people of fifty, and 3·8 by people of sixty. Such a rate would be bound to lead to a considerable consumption of capital. When the rate is 1½ per cent. the income even of people of forty can be more than trebled, of people of fifty quadrupled, and of people of sixty increased more than sixfold; and thus the owners of the far greater part of the total wealth would have a very strong, in cases an irresistible, incentive to use up their capital. How such a state of things could last is a question which we leave to the prophets who have contemplated a fall of the rate to those levels.

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* *Bouppteckninger efter avlidna* (Stockholm, 1910).

The result of our investigation up to the present is that the supply of capital-disposal depends upon the rate of interest, and generally falls with it. Within the limits of the ordinary fluctuations of the rate the dependence is not very conspicuous; but if the rate were to fall to 2 per cent. or lower, the supply of capital-disposal would be greatly reduced.

This supply is, as we saw, equivalent to the difference between saving and overconsumption. At any conceivable rate of interest these two opposite economic tendencies would make themselves felt. No rate is so high that it would entirely prevent overconsumption, *i.e.*, the consumption of capital or of income. There are always cases in which several hundred per cent. is willingly paid if the satisfaction of a present want in difficult circumstances can be purchased by a sacrifice of a future want. On the other hand, no rate is so low as to prevent any further saving. Even if they had not to count upon interest, great numbers of people would set aside part of their income for future needs; and capitalists would certainly not consume the whole of their capital as they get it.

Present and future, therefore, mean different things to different individuals. It is not possible to put the infinite variations in this respect into a single formula, as if there were a general underestimate of future wants or future goods in comparison with present. The actual supply at any time of capital-disposal is determined by the conduct of different individuals at a given rate of interest, and it is the resultant of a great diversity of, in part, antagonistic forces. This resultant cannot be given in a general way. It is essentially related to a definite rate of interest, and changes with it. Hence if the supply of capital-disposal is a function of the rate of interest, the significance of this supply for the rate of interest can only be in the way in which the supply reacts to changes of the rate, and therefore only be exerted through that form of the function which represents the dependence of the supply upon the rate of interest. The theory of interest requires some knowledge of the general form of this function, and cannot be satisfied with a vague assurance that the resultant of the many different appreciations of future goods in terms of present goods is an underestimate of the future.

§ 25. The Determination of the Rate of Interest.

When we conceive interest as the price of capital-disposal, its position in the general pricing process is at once clear: like any other price, interest has the social-economic function of restricting the demand, and eventually also of stimulating the supply, to such an extent that the demand can be covered by the supply. The object of the theory of interest is thus reduced to an inquiry into the way in which the demand or the supply of capital-disposal varies with the rate of interest. This inquiry has been made in the last two sections. It has been shown that the supply of capital-disposal is relatively fixed within the ordinary limits of the fluctuations of the rate, and is little influenced by the rate. The main object of the rate of interest is, in those circumstances, the due limitation of the demand for capital-disposal: primarily, the restriction of the demand for the services of durable goods, secondarily, to check the tendency to substitute capital-disposal for other means of production. The first kind of limitation is directed immediately against consumption; the second refers to the choice of method of production. The demand for the control of capital is so great, as we have seen, that it can only be sufficiently checked by a rate of interest at the ordinary level. Any relaxation of this pressure will set free a large new demand, which cannot be satisfied by the available amount of capital-disposal, even if the reduction of the rate did not cause any reduction of this amount. Here, in ordinary circumstances, is the reason why the rate of interest cannot be lower than it actually is.

As the problem of interest has often, perhaps generally, been treated as an ethical rather than an economical problem, the question why capitalists must be paid has been thrust into the foreground. The complaint has been made that the capitalists exploit the community in claiming interest on their capital; or, at all events, it has been demanded of them that they ought to be satisfied with a lower interest. The whole of these arguments become meaningless when interest is treated as a purely economic problem. It then appears that the capitalists proper have very little influence on the actual amount of the rate of interest. Within the limits of the ordinary fluctuations of the rate capitalists, on the whole, provide about the same amount of capital at a low as at a high rate of interest. The supply of capital-disposal from this side is tolerably passive in regard to changes of the rate. Capitalists draw interest at the actual rate, not because by some means or other they extort this interest, not even because they want to do so, but simply because it is economically necessary to check the demand for capital-disposal, and because this restriction, in accordance with the general principles of pricing in the economy, can only be effected by putting a sufficiently high price on the control of capital. Even if we suppose that savers would provide just the same amount of capital-disposal if they received no interest at all, the rate of interest would not disappear. The restriction of the available stock of capital-disposal would always make it necessary to check the demand by a suitable rate of interest. Hence the existence of interest is essentially independent of the claim of capitalists to be paid interest. Another thing is that, if the degree of saving were greater, the rate of interest would be lower. The advocates of a lower interest should, therefore, logically direct their zeal, not against the savers, but the non-savers, against superfluous consumption either in the individual or the national economy.

In times when a considerable increase of population, the opening up of new regions, a keener demand for better houses, trams, railways, or electrical installations, etc., or new inventions which replace manual labour by machinery, and make more urgent demands for the use of durable goods—that is to say, for the disposal of capital—the rate of interest rises. There are then many complaints that the banks repress the spirit of enterprise by their high rate of interest and hinder economic development. Social politicians lament that the heavy interest-demands of the capitalists thwart their efforts for the good of the people (the housing of the working classes, for instance). The community finds itself greatly hampered in its economic activity, and the public denounces a policy of interest that stands in the way of the realisation of its need of new conveniences, such as railways and other constructions.

All these complaints are born of the wrong idea that the supply of capital-disposal has a determining influence on the rate of interest; they show a defective insight into the economic object of interest, which is to keep within certain limits the entire economic activity that makes demands for capital-disposal. It is just in such periods that the rate of interest has to check the ardour of employers and act as a brake on economic progress. The indispensable necessity of this price-fixing comes from the scarcity of the available control of capital. Precisely because the rate of interest always keeps the fluctuating demand for capital-disposal adjusted to the limited supply, it is the general regulator of the up and down movements of the economic life. We shall better realise its far-reaching importance in the last Book of this work.

The results of our inquiry into the determining factors of interest show how little the usual idea of interest as " cost," in Marshall's sense, or as a price that must be paid to indemnify savers for the sacrifice of " waiting," touches the heart of the matter. In order to sustain his idea of the nature of cost, Marshall has to lay a certain stress on the assumption that a rise of the rate of interest has a tendency to enlarge the extent of saving.* It is possible, perhaps probable, that there really is such a tendency. But it is by no means necessarily the case. The whole theory of pricing, and, naturally, that of distribution also, which is only one side of the theory of pricing, is bound to remain the same in its essential features even if the extent of saving were independent of the rate of interest. A small and, in any case, purely quantitative alteration of one factor of the fixing of prices ought not to influence our conception of the nature of this factor or our account of the entire mechanism of pricing.

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* Book VI., ch. ii., § 4.

In the First Book we took for granted the quantities of the different elementary means of production that are available in each unit-period. We now drop this assumption as regards the disposal of capital. In its place we now assume that the quantity of capital-disposal available in each unit-period is fixed as soon as its price—the interest—is fixed. For the solution of the general pricing problem this assumption does not matter. In our treatment of this problem the prices of the means of production were at first taken for granted, and we then found the conditions which these prices must fulfil in a state of equilibrium. One of these prices is interest.

In the third and fourth chapters we were compelled to assume that the sums of money that are available in each unit-period for consumption or saving are given with the prices of the means of production. We could then take no account of the special position of interest. Being the price of a means of production, interest is an element in the constitution of income as well as in the pricing of finished goods, and it has in this character the same influence as the prices of the other means of production on the extent of consumption or of saving. But interest has, in addition, a specific influence on the degree of saving, and, though this influence is not particularly visible at ordinary rates, it must have its definite place in our general explanation of the mechanism of pricing. This, however, raises no new difficulty, as the explanation begins, in any case, with an assumption of given prices of the elementary means of production.

Starting from this assumption, we take the continuous formation of capital and the percentage of progress as known. This percentage in turn conditions the steady rise of the future demand, and consequently the demands upon the existing means of production in the present unit-period which proceed from this demand. As these demands must be equal to the available quantities, the whole problem of pricing is settled. This, however, also settles the progress. The whole direction of the economy—the relative distribution of the economic efforts between present and future, or, more accurately, between the immediate and remote future—is thus seen to be one aspect of the great process of pricing by means of which the exchange economy is kept in a state of equilibrium.

The savings of the population have, of course, the decisive influence on this direction of the economy. The rate of progress is, in a community based upon private ownership, determined by the regard which its members show for the future in their private affairs. If there is much saving, capital-disposal is made available for a considerable increase of the real capital, and the demand for capital-disposal need not be checked by a high rate of interest. A community of this sort makes steady progress. It is, of course, the reverse when there is little saving. Hence radical changes in the degree of saving would have a very strong influence on both the rate of interest and the pace of progress.

If saving were so slight that the people, as a whole, would provide no new capital-disposal even if the interest were high, the community would be a stationary economy. In that case, clearly, the demands for capital-disposal would have to be severely checked, and for this purpose a high interest would be needed. In view of the actual possibilities of the profitable use of capital-disposal for the better satisfaction of wants, a stationary economy is only possible at a rate of interest which living humanity would regard as extraordinarily high.

Now that we have shown the position of interest in the pricing process, it is comparatively easy to run over the effects which various external factors have upon it.

With the development of civilisation certain tendencies toward an increase of the supply of capital-disposal make themselves felt. There is, in the first place, the increasing security of life and property, which has become very complete with the modern development of States. It, naturally, encourages provision for the future. The whole of our economic development, moreover, accentuates this provision. The durable house and agriculture had the largest share in first educating men in economic foresight and planning. The introduction of the future into the economic calculations of the present was afterwards further promoted by the steadily increasing importance of durable goods in the human economy. The lengthening of the duration of life, which we owe especially to modern hygiene, had the same effect. The man who can count on living another thirty years must be much more willing than the man who can only count on ten or fifteen years to sacrifice some of his present wants in order to provide for his future.

Contemporaneously with this development, which increases the supply of capital-disposal, there is a steady increase of the demands for it in order to utilise durable goods. The sources of these demands have been fully explained in previous sections. They have grown so vigorously that it has never been possible to satisfy them entirely. There has always been a scarcity of capital-disposal, and this has made interest necessary.

A comparison of the development of the supply and the demand for capital-disposal puts it beyond question that the former has been much more steady than the latter. The changes in men's economic habits, their education in concern for the future, are necessarily slow, but, in spite of occasional setbacks, they proceed fairly steadily on the whole. The demand, on the other hand, generally goes up by leaps and bounds, and then relaxes for a time. The increases are due mainly to such occasional circumstances as inventions, improvements in means of transport, and the opening up new countries in consequence of discoveries or political developments. All this means that for a time the influence of the demand upon the rate of interest is most prominent. The fluctuations of the rate in these periods are, as a rule, attributable to changes in the demand. But if we take longer periods, we perceive a real influence of the supply of capital-disposal on the rate. The increasing provision for the future which the advance of civilisation brings with it has made it possible in the course of centuries to reduce the rate of interest to a certain extent: a process that may still be observed when semi-civilised countries move on to civilisation. The reduction, it is true, is by no means so one-sided and pronounced a movement as it is sometimes represented. The fall of the rate of interest in consequence of increased saving, in particular, is not an indefinite tendency that we may expect to continue. It is, as we showed in the previous section, already checked by powerful forces, and it has certainly only a rather narrow margin for further development.

On the basis of these general facts it is now possible to explain the fluctuations of the rate of interest which historical statistics evince: assuming, of course, that we know all the factors which have an influence on the rate, as shown by the analysis we have made. For shorter periods, as we saw, it is mainly the tendencies on the side of the demand for capital-disposal which cause changes of the rate. Hence we must seek the causes of the ordinary fluctuations of the rate of interest in the varying demand for durable goods, or the varying production of fixed real capital. As the rate of interest in turn regulates this demand, the whole movement of the economic life is seen to be a continuous interaction of rate of interest and production of fixed capital. Closer study of this interaction—or of "conjuncture-movements," as we shall call them—belongs to the dynamics of the economic life, and will be the subject of our Fourth Book.

One chief task of the theory of interest is to explain the fluctuations of the rate. The other task is to determine to what extent interest is a necessity or an accidental outcome of modern conditions or the institutions of our actual economic order.

On this question we would make the following observations. A fall of the rate of interest much below what is now the usual level would, as we have shown, greatly strengthen the demand, and materially reduce the supply, of capital-disposal. These opposite tendencies, which are both very pronounced when interest is low, are bound to check the fall of the rate very speedily. Let us imagine for a moment that there is a rate of 2½ per cent. all over the world for a long time. Our study puts it beyond question that such a rate would provoke quite enormous demands for capital-disposal for costly buildings and installations of all sorts, and would at the same time lead small and medium capitalists to consume their capital to a great extent. One does not need to reflect long on these things to see clearly that the counteracting tendencies that would be brought out by this rate would have such force as to make it impossible to sustain the rate.

At the close of the last century various circumstances contributed to bring the rate down appreciably. The lowest point was reached in the middle nineties. We are not surprised that this led the general public to imagine that interest had a natural tendency to fall. But that such an idea should be adopted by economic science and represented by reputable representatives of the science as a result of research, is really not very creditable to the science. Schmoller expresses himself somewhat cautiously when he thinks it "not inconceivable" that "the rate of interest, which fell in the eighteenth century to 3, and in the nineteenth to 2¾ and 2½, may in the twentieth century fall below 2, or even to 1½."* Before describing such a development as probable, one ought to make it clear how it would be possible to maintain a state of things in which the owners of the far greater part of the wealth could treble their incomes by consuming their capital—and generally more than treble it—and at the same time the check which the actual rates put upon the demand for durable goods and the requirements of technique would be greatly enfeebled. We cannot say, of course, that a rate of 1½ per cent. is absolutely impossible. But what would be the character of a social development that would make such a rate possible? As far as we can see, it would mean an almost complete cessation both of the increase of population and of any economic advance that makes large demands for durable goods; moreover, a lengthening of the period of human life large enough to keep the consumption of capital, even at this low rate of interest, within the necessary limits.

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* *Grundriss*, II. Teil, p. 208.

Given the actual duration of human life and the actual rate of increase of population and technical progress the rate of interest cannot go much lower than it is to-day. These are the chief determining factors of the rate. A complete stagnation of economic life all over the earth in consequence of external circumstances would naturally bring down the rate considerably. But when it reached 2 per cent., the tendency to consume capital would already make itself felt so strongly that it seems questionable whether the supply of capital-disposal would be large enough even for this state of stagnation. But the very idea of such a stagnation is impossible. The demand for capital-disposal in order to increase the real capital is very considerable at the actual rate of interest. Moreover, the entire demand for commodities and the whole development of technique are adjusted to a certain level of rate of interest, and they would be quite revolutionised at a lower rate—with the result of an increased demand for durable goods and therefore for capital-disposal.

These considerations on the actual conditions of a fall of the rate make a continuous downward movement, such as Schmoller and, still more, other authors suppose, improbable in the last degree. A further reduction of the rate would at each small step encounter an increasing resistance. In no circumstances, therefore, is a state of things in which the rate would be zero, and consequently there would be no interest, at all conceivable.

We have repeatedly pointed out that a theory of interest must necessarily be quantitative. It must not only explain why there is interest, but why it is generally about the level which we actually find. The two explanations cannot be distinct: the existence of interest is due to the same forces as those which account for the actual rate. A theory of interest must, therefore—to define the problem properly — explain why interest is reckoned in so much per cent., and not in so much per mille. Why does it fluctuate between 3 and 4 per cent.? Why not 3 or 4 per mille? A theory of interest that suits either of them is, strictly speaking, no theory of interest. We have already answered the question. The duration of human life is one of the chief factors. At first sight there is nothing self-evidently or *a priori* probable in the fact that the rate of interest varies between 3 and 4 per cent. But if we take the number of years' purchase of a fixed annuity instead of the rate of interest, we may characterise the actual rate of interest by saying that a perpetual annuity is paid for at twenty-five to thirty-three times the annual value. When the matter is put in this form, we suspect at once that there is some connection between the rate of interest and the duration of human life. Men at the age when they have control of their own capital cannot, as a rule, count upon more than twenty-five to thirty-three years of life, and will, therefore, not generally sacrifice much more than twenty-five to thirty-three years of returns to secure a perpetual annuity. The man who thinks an interest of 1 per cent. possible is really supposing that, for instance, an estate with a net return of £10,000 would be bought for a million! But the millionaire, by consuming his million, can do very much better for his remaining years than buying an income of £10,000 a year. It is quite impossible to suppose that on the present duration of life absolutely durable goods would find purchasers at a hundred, or even fifty, times the price of their annual returns. An interest of 1 per mille would only be possible if people were disposed to save up £100,000, and then throw it away to get an annuity of £100. That sort of economising would only suit a Methusaleh.

In conclusion we must point out once more that what we say as to the possibility of a fall of the rate of interest applies, of course, to the typical rate which we are considering, and is best represented by the interest on mortgages and ground rents. That the rate of interest for short capital-disposal may fall lower is not disputed. Already the private discount rate on important exchanges has occasionally fallen below 1 per cent. This low rate for short-term capital-disposal is generally due to the fact that the lender did not want, for some reason, to tie up his capital at the time, and preferred to leave it free to await a better chance of permanent investment.

§ 26. Interest in a Socialist Community.

The preceding inquiry has shown that interest is a necessity of the actual exchange economy. It might, however, be suggested that it is due to the special features of the present economic order, and might not be necessary in an economy without these features. It is undeniable that the efforts of employers to demand durable goods in ever-increasing quantities for production, and the tendency of capitalists to consume their capital when the interest is low, have a considerable influence on the state of interest; indeed, one might say that it is the real economic work of interest to check these tendencies. It is, therefore, not inconceivable that an economy that has no private enterprise or private ownership of capital would be in quite a different position as regards the necessity of interest than the actual economy is.

But this would evince a quite wrong idea of the nature of interest. Up to the present we have considered the phenomenon of interest in connection with our actual economic conditions. This method is quite natural in a treatment that chiefly regards the concrete reality.

Interest has to be related to the tendencies that make themselves felt in the conduct of employers and capitalists; that is to say, traced to elements which seem to depend upon the actual form of our economy. But behind these tendencies there are essentials of human life which would be present in any sort of economy, though, perhaps, in a different form. In the main interest would still, under another form of society, be governed by the same forces as in the modern economy. To get a correct idea of the deeper nature of these forces, and therefore of the nature of the problem of interest, it is very useful to study interest under Socialism. It is also one of the best ways to refute erroneous ideas of the nature of interest.

The presuppositions of the organisation of the Socialist economy have already been given (§ 15). Even in that system the essential feature of the exchange economy—the freedom of the individual in the choice of consumption within the limits of his income—remains. It is primarily this freedom that makes interest necessary in every economy, and consequently even under Socialism. If prices were calculated for the use of reproducible durable goods which should simply indemnify the owner for depreciation of them, but not include interest, the demands of consumers for these goods would increase so much that they could not be met. We have only to think of the demand for houses if prices did not include interest. If the Socialist State were to fix prices on this basis, it would have to face insatiable demands for houses. And so it would be in other matters. The demands of consumers mean, directly or indirectly, a demand for the use of durable goods, and therefore of capital-disposal, which necessarily has to be checked. This can only be done in the exchange economy by prices, or by allowing for interest. For that reason Socialism would be bound to admit interest. This means that every satisfaction of wants that requires the disposal of capital must have a price fixed which includes a proportionate allowance for the disposal of capital in addition to the cost of labour. In this way the prices of things would be raised in very different degrees—of houses more than of clothes, and so on. Even Socialism cannot get away from the need to fix prices in this way.

The management of the Socialist system, which we assume to have the entire control of production in its own hands, must, moreover, constantly consider which methods of production are the cheapest, and particularly to what extent the disposal of capital should be substituted for other factors of production. It would clearly be impossible to base this calculation on the assumption that no price need be taken into account for the disposal of capital. Conduct of that sort would, as is clear from our discussion of the problem, direct production into quite impossible channels. The Socialist State would, therefore, be compelled to postulate a certain interest as the groundwork of its whole calculation of cost, and consequently of its entire management of production.

Once a rate of interest was settled, the choice of methods of production, and consequently the prices of finished articles and the demand of consumers for those articles—in fine, the total demand for capital-disposal—would be settled. If we suppose that this demand in any year necessitates a certain increase of the capital, the Socialist State must save that amount of capital. Within certain limits it can, of course, decide itself what it will save. But once the degree of saving is settled, the interest that is necessary to adjust the demand of capital-disposal to the supply agreed upon is also settled. It follows that in a Socialist economy the rate of interest depends to some extent upon the will of the controllers of the economy; that is to say, in so far as it depends upon the degree of saving. That the Socialist State can exert a certain influence in this sense is obvious, since it has to determine the degree of saving. But no conceivable amount of saving releases the Socialist State from the necessity of fixing interest. The demands for the disposal of capital when there is no interest would be simply insatiable.

CHAPTER VII

GROUND RENTS AND THE PRICES OF NATURAL MATERIALS

§ 27. INTRODUCTION.

WHEN the exchange economy is so far developed as to include agricultural products in great abundance and regularly, it presently appears that these products receive a price that not only covers the cost of labour and production, but yields a further profit which goes to the owner of the agricultural land. The owner who tills his own soil hardly regards this profit as separate income; he conceives his whole income as the result of a specially fruitful production. But when the land is farmed out, the rivalry of the farmers is such that they can expect no more than a normal recompense of their productive activity; any profit beyond this they must pay as *rent* to the landowner. Ground rent thus becomes a separate sort of income. The land receives a price which represents the amount of this ground rent capitalised on the current rate of interest. Then the man who buys land to cultivate himself has to allow for interest on the purchase-price; in other words, he must secure a return that includes, not only the normal compensation of his productive activity, but also the ground rent. The increasing encumbering of the land makes this all the more imperative. In these circumstances, the ground rent is seen to be, from the point of view of the individual economy, part of the cost of production that must be covered by the products; and some people get the idea that the products are dearer on account of the ground rent. They think it unjust that a group of landowners should be able, simply in virtue of their ownership of a commodity that nature has provided free, and is not the fruit of any productive exertion, to draw a large part of the social income. We hear demands for confiscation, or at least heavy taxation, of ground rents. On the other hand, we have claims from the landowners that the State shall, by a protectionist policy and other measures, keep the prices of agricultural products high enough to enable them to cover the cost of production, which includes, particularly, the ground rent. Hence agricultural ground rent has taken up a very prominent position in the fixing of prices, and so theoretical economics has given very special attention to this type of income.

The physiocrats, who regarded the fertility of nature as the one possible explanation of a surplus of production above the necessary cost of it, were followed by Adam Smith. He said that in agriculture nature works in conjunction with man and enables agricultural workers to produce not only, like the manufacturing workers, a value equal to their own consumption and the profit on capital, but also a rent for the ground landlord. This idea was disputed afterwards by the representatives of classical economics. In England the limited capacity of home agriculture to meet the needs of the population as regards agricultural products became clearer and clearer. It was, therefore, natural that attention should be paid to the scarcity of land as a reason for ground rent; and this idea was then elaborated by the classical theory of rent. Its most acute logical development is found in Ricardo, and the whole of the subsequent discussion of the problem of rent revolves round Ricardo's theory.

He defined rent as that part of the produce of the soil which is paid to the owner for the use of the original and indestructible capacities of the soil.* He thus means to distinguish the part of the annual payment which is paid for the use of a real capital from the ground rent proper. But when the best soil is no longer sufficient on account of the growth of population, and therefore less fertile or less well placed land—in a word, inferior land—must be used, a rent is paid for the better quality land which is determined by the difference between produce raised, with a certain application of capital and labour, on the better or on the inferior land. Instead of tilling new land of an inferior quality, a man may use his capital in a more intensive exploitation of the land he already cultivates. Doubling the capital employed on this land will not give a double harvest, however, but merely increase the harvest to some extent. If it pays at all to use the second capital on the land, the first capital must yield an additional profit which in turn, being a difference between two products obtained with a certain outlay, represents a rent, and goes to the land-owner. When the population is increasing, therefore, agricultural produce has to be raised in one or the other way with a larger application of capital and labour. The rent is the surplus of the product that is obtained under the more favourable conditions over that obtained under the worst conditions.

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* Ricardo, *Works* (ed. McCulloch), p. 34.

The price of the product is always settled by the highest cost of production that must be incurred to meet the demand. For brevity we may call this cost " the marginal cost of production." An extension of agricultural production which necessitates a greater use of capital and labour in proportion to the product thus raises the price of the product. Although the product that is obtained on the relevant land with the first outlay is not increased, it rises in price; and this higher price enables the farmer to pay a rent. The reason for the advance of the price is that the final quantity of the product requires a larger outlay, not that the land-owner draws a rent. The price is settled by the cost of production in the section of production where no rent is paid. Hence the rent cannot in the least be a part of the price. This general thesis, that the ground rent is not an element of the cost of agricultural production, is, according to Ricardo, a principle of great importance in economic science.

Mainly in connection with Ricardo's theory of ground rent, and under the influence of the quite enormous rise in value of agricultural land in England, there developed a tendency hostile to ground rents, of which Stuart Mill was the leading English representative. In the United States, where, on account of the rapid increase of the population, there was a great development of ground rents and of speculation in land, the tendency found its most powerful spokesman in Henry George. The rise in the price of land seemed to him an " unearned increment" which fell to the land-owners, merely in virtue of an irrational right of property, while they slept. The whole ownership of land seemed a monopoly of the exploiting of productive labour; and it was demanded that the State should appropriate ground rents, or at least the increase in value, by suitable taxation. The most radical, who went so far as to want to confiscate existing ground rents, believed that this would suffice to raise the entire revenue of the State, and they accordingly put forward the " Single Tax " program.

Urban ground rents have generally and considerably increased during the last century under the influence of the growth of population and the migration to the towns. The profits that have thus been made by selling pieces of land were in cases quite enormous. The desire to have a share in this easy way of getting rich led to feverish speculation in land in which great wealth was made; though, on the other hand, great losses were also incurred from over-speculation and reaction. Along with ground rents, rents also rose, especially in the central parts of large towns, to a height that was felt to be oppressive. In the public mind these high rents and the increasing scarcity of houses seemed to be consequences of the speculation in land and the rise in the price of land to which this led. This idea was even supported by representatives of science. Social politicians taught that the housing conditions of a large part of the population, particularly of the working classes, were growing worse and worse, and that the rise of rents was mainly responsible for this, but that it was itself a consequence of the machinations of the land speculators who had sent up prices by their deliberate withholding of land, repeated sales of it, and the heavy burden of mortgages they brought upon it. This state of things could only be improved by checking or preventing speculation in land and rising land values, or by land-socialisation; further by supplying suitable traffic-facilities and by regulation of building. In Germany this led to a struggle against the large tenement houses which were blamed for the price of land. Generally speaking, urban ground rents were represented as to a great extent the result of conditions which were subject to political control, and were regarded as an essentially political, not an objective economic, phenomenon.

It is obvious that this idea would not help to promote the scientific knowledge of the nature and determining factors of urban ground rents. Like every other price, these must be objectively settled by the general principles of pricing. To recognise this is not to deny the possibility of a deliberate interference with the evolution of rents, by, for instance, the traffic policy of the community. Any such interference, however, must act through supply and demand—that is to say, through the regular machinery of pricing—and is consequently to be regarded as a force forming part of this machinery and acting in association with many others, not as an enactment of social reform raised above economic necessities and outside the range of economic theory. The special difficulties of the theoretical treatment of urban ground rents are found particularly in the precise determination of the assumptions, because in this case the supply and especially the demand are rather complex phenomena. From the point of view of economic science, however, the problem of urban ground rents is essentially of the same character as that of agricultural, and we, consequently, need not make any special study of them in our general account of theoretical economics. The general lines of the explanation of urban ground rents are given when we have become quite clear as to the general character of the development of rent in the exchange economy. To this subject we will devote the following section.

§ 28. The Nature of Rent.

We have defined rent, in the most general sense of the word, as the price of the use of a durable good. It follows that a price that is paid for consumable goods is not a rent, even when the articles are what we call free natural goods. The income that is obtained by the sale of ore from a mine or timber from a forest is not rent in the strict sense, though it comes very near to being rent when it lasts a very long time. Science has been clear on this point ever since Ricardo. And if an income from the sale of natural materials is not rent, and is therefore an essentially different kind of income from ground rent, we must logically regard natural materials as a separate factor of production. The traditional idea of bringing every co-operation of nature under a common head, as a single factor of production, cannot well be sustained, if the corresponding income is divided into two different sorts. Since we have recognised the great importance of dividing material goods into durable goods and goods for consumption, we have a further reason to divide the factor of production that is called " nature " into two main types, *land* and *natural material.*

This distinction throws light on the limits of the idea of rent on one side: rent is only what is paid for the use of durable goods. Primarily, however, the accepted idea of rent in science relates to the use of those durable goods which are not produced—to put it generally, the use of land and those of its qualities which are not produced, or the " original " properties of the land. This restriction of the definition of rent is based upon the fact that science must conceive the " rent " of a produced durable good mainly as interest on capital. Rent in the proper sense should not include any compensation for a human sacrifice of any sort; it should be the price of the use of an existing durable good that could not itself be regarded as an outcome of a productive activity. But in a sense even land may be produced, and it is, therefore, necessary to restrict the word rent to the use of the land " with its original characters," or of " natural land."

It is further clear that those properties of the land which, in the ordinary use of them, can only be maintained by a suitable activity are not to be reckoned as land. The fertility of the natural land, which is maintained in agriculture only by repeated manuring, and is lost if the fertilising is not done, is both economically and physically to be put on the same footing as the minerals found underground; it must be counted as a good for consumption, not a durable good. Even relatively durable properties of the land which actually are only maintained by constant productive activity are not to be regarded as "land," but as fixed real capital. Hence the land as a primary factor of production includes only those original properties that are not used up by ordinary use, and it is in this sense, though not in the absolute, physical sense, " indestructible."

Consequently, in accordance with Ricardo's formula, in the strict sense we have only to consider as rent the price of the use of the original and indestructible forces of the land. It cannot, therefore, be conceived as the recompense of any sort of productive activity, either of a creative or a maintaining character. The existence of rent is determined simply by the necessity of restricting the demand for the scarce use of the land.

The general disposition to think of the land as not producible is chiefly due to the fact that the matter is regarded more from a physical than an economical point of view. From the economic point of view the land is not merely a piece of earth. It includes various physical and economic properties, such as its fertility, its connection with markets, or, if there is question of urban land, its locality, its nearness to the centre, or its being in select residential quarters. These properties can be created to a great extent by productive activity, and are so produced as soon as the condition of the market makes it profitable. We have an example of the production of fertility on a large scale in the irrigation works which have opened up the arid part of North-Western America to agriculture, and in the regulation of the Nile. From the point of view of covering the European demand for wheat the construction of the North-American and Canadian railways and the development of the great ocean liners must be regarded as means of producing land that can compete with European land on European markets. It is well known that this competition has put considerable pressure on the rent of agricultural land in Europe. It is also a well-known fact that Holland has won a good deal of land from the sea, and thus literally produced land. As to urban land, it is particularly notable that whole garden cities are now produced in the way of business by speculators, and this creates competition with the urban landowners. Distances are overcome by electric trams and trains, and excellent residential quarters are created with good streets, lighting, first-class hygienic arrangements, schools, etc. Turning from the land in the literal sense to the other durable goods of nature, we find that these may be produced in the same way. The power of waterfalls, for instance, is increased by regulating the streams. One may even speak of a real creation of waterfalls for industrial purposes. The position of a fall is, of course, important, but even in this respect the latest development of the transmission of electrical energy at high tension makes it fairly easy to raise new competitors.

In the great majority of cases in which "land" of a certain sort is required there is a distinct possibility of increasing the demand by productive activity. As soon as the price of the use of the land in question rises high enough, this possibility reveals itself. Thus the price has an unmistakable influence on the supply. This in turn has a regulating influence on the price, and therefore on rent. The rent of natural land is, in a sense, regulated by the cost of production of the manufactured land which enters into competition with it. Cheapening this cost has the effect of bringing down the rent of natural land. What is created by this kind of productive activity is not, of course, land in the sense of a primary factor of production, but a product into which land enters as one means of production with others. But this product enters into competition with land that is nothing else but land, and the latter is, therefore, not incapable of increase in the sense that it is not exposed to any competition.

Since natural land as a primary factor of production is both incapable of increase and indestructible, any tax laid upon the sheer rent of this land will have no influence on the market; for the same reason it cannot be shifted, but must affect the rent itself. On the whole it is, as regards the providing of the community with natural land in the sense of a primary factor of production, of no consequence that the owner of the land is paid for the use of it, and so derives an income from his property. Handing over the utilities of natural land is not a service that need be recompensed. But we must not conclude that the ground rent is of no consequence in regard to the supply of land-utilities of a certain quality. As we have previously shown, the ground rent may attract to the production of land in competition with natural land. We clearly cannot take away from this producer the part of the rent which represents the interest on the investment of capital required without injuring the productive activity in question. As it is extraordinarily difficult in practice to distinguish between land with its "original" properties and "produced land," any attempt to put special taxes on the ownership of natural land will find it extremely difficult to make allowance for the fruits of productive enterprise.

The rent of natural land is, like all prices of primary means of production, directly settled by the general pricing process. The price of natural land proper itself is, as the value of the rent capitalised on the current rate of interest, a secondary outcome of pricing. But in so far as land is produced in competition with natural land, the price of the natural land also is determined by the cost of production of the competing produced land, and therefore in direct connection with the pricing process.

It follows that even the use of the land is not to be regarded as an absolutely scarce factor of production. The supply is influenced by the price, and we must take into account this dependence of the supply upon the price in dealing with the general pricing problem, and must regard the form of this dependence as one of the objective determining factors of pricing instead of the supply itself.

From the point of view of pricing one would be disposed to say that what characterises the rent particularly as a price is, not the fact that the good for the use of which the rent is paid has not been produced, but that similar goods are now not produced in competition with it, and therefore that the price of the good itself has no separate determining factors. This requirement of rent is sometimes realised by the net return from the use of an existing fixed real capital, or by the gross return deducting the cost of maintenance and renewal. Once the fixed real capital has been produced, and therefore the durable good exists, its particular cost of production belongs to the past, and has no further part as such in the pricing. In producing the real capital in question it is, of course, estimated that the net return must cover the interest on the capital represented by the cost of production. The net result may afterwards prove to be larger or smaller; in that case the cost of production of that particular good has no further influence. It is only in so far as it represents typical cost of production, and the demand necessitates a further production of such things, that the cost has an influence on the net return of the good and gives it the predominant character of interest on the cost of production. In cases, however, where the relevant real capital is itself individual—that is to say, where similar goods are not produced or the cost of production materially changes—the net return loses its connection with the cost of production and approaches in its economic character a pure rent in the sense described. A railway is a good example. Once it is constructed, the cost of construction plays no further part; the return now depends entirely on other matters. If the cost of construction has a bad rate of interest, there is no help for it, because the capital is now tied up in the installation and cannot be freed from it. If the return exceeds the ordinary interest on the cost of construction, it will probably, at least within certain limits, not lead to the construction of a new line. The net return of the line has to a certain extent in those circumstances the character of a rent.

We must bear in mind, however, not only that the real capital has to be maintained and renewed, and that the cost of this must be met out of the gross returns, but also that the capital which thus requires to be maintained must pay interest, and that this interest also must be paid out of the gross returns before we come to a net return with the character of a rent. If the said capital does not succeed in paying interest, in the course of time there will, naturally, be no capital sacrificed for maintenance and renewals, and the real capital will be destroyed—in so far as it is not "indestructible." It follows that there is scarcely a rent-like part of the returns in the case of most real capitals, or at all events it is relatively insignificant.

The net return of a durable good has thus less of the character of a rent the less individual the good is, or the larger is the number of such goods and hence the more frequently they have to be reproduced; the more frequently also new articles of the kind must be produced to meet an increasing demand, and the greater the relative importance of the cost of maintenance and renewals, and, finally, the more stable the technical conditions and the costs of production are. If, for instance, we take the buildings which are used in agricultural production, we shall find all these elements very clearly realised. The new investment of capital in such buildings goes on continuously, if we take a large exchange economy, and the net return that is obtained on this real capital is essentially in the nature of interest. If the interest on the required capital is not covered, the supply must be very rapidly diminished, or at least it must fall short of requirements. The time which production itself needs is not of any great consequence here, since buildings of that sort can be erected, as a rule, in a few months, or even weeks. Hence the supply can so quickly follow up an increased demand that a rent, of which a certain durability is required, can scarcely be formed. There is more of the character of a rent in the returns on improvements, such as draining, where the duration is considerable and the work of renewing and maintaining is not great. Certain improvements sometimes require so long a time to carry out that the supply may for a time fall short of the demand, and so there may be in some measure a rent-like income.

We find, however, that the circumstance that production takes time is, on the whole, not very important as regards the development of rent. Even where it occasionally helps to form a rent-like income, it is, as a rule, too brief to be a real rent. The production of fixed real capital generally requires only a short time under modern conditions. The chief exceptions are railways, waterworks, and similar constructions, but even in the case of these the time required is not so long, as a rule, as to permit a more or less temporary development of rent in the existing installations of the same kind. The other elements, given above, are generally decisive for the rent-character of the return on fixed real capital.*

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* The immense importance which Marshall gives to the distinction between short and long periods in the formation of a rent-like income seems, in view of the above facts, to be scarcely justified. That a division of real capital, according as the supply of it has or has not to adapt itself to the demand in a period of "medium length," should coincide with the deepest and most important dividing line in economic theory—that the circumstance that the English system of land-tenure distributes the duties of land-owner and farmer on that line is the explanation of the superiority of British economic science—must surely be regarded rather as an exaggeration. See *Principles*, Book VI., ch. ix., § 5.

§ 29. The Pricing of the Use of the Land.

The use of the land occupies theoretically the same position in the pricing process as the other factors of production. The general object of fixing prices—to restrict evenly the demand for finished articles by calculating uniform prices for the factors of production, to adjust the indirect demand for the factors of production to the available supplies, and thus to direct economically the entire process of production—has the same significance for the use of the land as for the command of capital, and, as we shall see, also for labour. As regards the effect of prices on the supply, there is in the case of the use of the land the special feature that the land provided in nature is in a sense fixed once for all, and therefore independent of prices. It is, however, more important from this point of view that an advance of the price of using the land leads to further exploitation of land provided by nature, partly with the aid of an activity that may be described as a production of " land " in competition with that provided by nature, and so provokes a reaction which is just as significant for the pricing process as an increase of the supply of any other other factor of production due to an increase of the price of it.

Hence the theoretical solution of the problem of fixing the price of use of the land is contained in our general solution of the pricing problem. What remains to be done is to study carefully the special processes in the pricing of the use of land; that is to say, in the fixing of ground rent.

We confine our attention to land used for agricultural purposes, and, to begin with, make the simplifying assumption that only one article, let us say corn, is produced. First let us study the case in which the land is limited in extent and of equal fertility and equally well placed—of " equal quality "—and the method of production is fixed and invariable in the sense that a fixed quantity of capital and labour is used on a given area. These abstractions are useful, as they are calculated to bring out clearly the scarcity of the land. When the demand is so small that it can be satisfied at a price of corn that merely covers the capital and labour cost of producing it, no price is necessary for the use of the land. In such circumstances there will be no ground rent in the economy. If the demand increases, it will, once the whole of the land has been taken up, be necessary to check the demand severely, because the land is scarce. This restriction can only be effected in the exchange economy by putting a uniform price on the use of the land, sufficiently high to raise the product to the necessary height, so as to adjust the demand for corn to the quantity producible on the given area of land by the given method of production. In this way a rent is formed—a ground rent—conditioned by the nature of the demand and the given quantity of land, and representing a pure scarcity-rent. This ground rent shows us the innermost nature of every ground rent.

In reality the scarcity of the land is never so absolute as we have supposed. It may be modified by the use of further capital and labour on the given land, which is equivalent to a substitution of capital and labour for use of the land, and consequently leads to a relative reduction of the demand for the use of the land, and, on the other hand, by opening up new land, or increasing the quantity of tilled land. The conditions of this modification of the scarcity of the land—the conditions of an increase of the harvest by applying more capital and labour to the given land or extending the cultivated area—are, with the scarcity itself as the chief determining factor of the price of use of the land, the supplementary factors of the price.

If we suppose that an increasing population causes a greater demand for corn, the price of the use of the land must generally rise. The decisive question then is: What is the effect of this advance of price? Every such advance in the price of using the land provokes a reaction in one of the three following forms:

1. A reduction of the demand for the product.

2. A substitution of further labour and capital for the use of the land.
3. An extension of the cultivated area.

The first two of these effects represent a reduction of the demand for the use of land; the third means an increase of the supply. All three are thus reactions against the rise of price, and collectively they maintain equilibrium. The closer analysis of these reactions is the special theory of the pricing of the use of land. As we see, the general scheme of this theory is entirely similar to that of the theory of interest.

In regard to the first reaction we must observe that its strength is in proportion to the elasticity of the demand for the product: that is to say, in proportion to the restriction of the demand that can be effected by a certain advance of the price. Now, the demand for wheat for bread is notoriously one of the least elastic of all demands. Hence in order to bring about the required restriction of the demand for the product it is necessary to raise the price of the use of the land considerably. The most general cause of an increase in the demand for wheat is the growth of population. But the consumption per head of the population also has increased considerably in the course of a century. These tendencies would clearly have entailed an enormous rise in the price of wheat, greatly restricting the demand, and of the use of the land, if the second and third reactions of the advance of price had not been of such great proportions.

The second reaction to a rise in the price of using the land is the larger application of capital and labour to the given area of land. This makes it possible to have an increase of production without increasing the demand for the use of land, and consequently checks the rise of the price of such use. The individual farmer who confronts the question whether he shall get more produce by extending his land (by tilling or purchase) or using more labour and capital on his old land, will be moved by a rise in ground rent to decide for the latter method.

The conditions which make possible an increase of the produce by a larger use of capital and labour are, obviously, an important determining factor of the price of use of the land. Hence it is very important in connection with the theory of ground rent to make a careful study of these conditions.

When further labour and capital are applied to the same piece of ground, we shall find, as a rule, that the extra produce that can be obtained by equal additions of capital and labour in succession grows smaller and smaller. Although this rule—generally called the " law of decreasing returns on land " has been represented as " the most important proposition in political economy,"* it does not seem to have generally been thought necessary to give it a sufficiently precise scientific formula.

We must, in the first place, settle what we are to understand by a certain use of capital and labour. By that we may mean a certain amount of capital-disposal together with a certain amount of labour. We may also, in a more general way—assuming that the prices of the use of capital and labour (or interest and wages) remain constant—speak of the unit of application of capital and labour as a certain sum used for buying the co-operation of these factors of production—say, one pound.

Let us now suppose that on a given piece of land such units of capital and labour are applied successively. Probably, in practice, there will then be certain irregularities in the corresponding increased returns, but on the whole these returns will exhibit a curve that rises at first, and then gradually descends. At first, when the tilling of the ground is quite inadequate, a new unit will generally give a larger increased return than the preceding. But sooner or later we come to a point where the increase of return corresponding to the last unit of capital and labour reaches a maximum, and then begins to descend asymptotically towards zero. Yet the total return increases, calculated per unit of the use of capital and labour. It is only later that we come to a point where this return per unit of use reaches its maximum, and from which onward it descends asymptotically toward zero. The necessity of this phenomenon, which is the real content of the law of decreasing returns on land, becomes clear when we reflect that to suppose the opposite would mean that it was possible to raise a crop of any size whatever on a given area. The last point given indicates the limit to which capital and labour can economically be used on a given area, when there is no ground rent to pay. Before the limit is reached, the cost of production per unit of the product can be reduced by the use of further capital and labour on the given area. Once the limit is passed, the use of capital and labour on new land of the same quality will be more profitable, as the use of this land costs nothing, and so the cost of production per unit of the product already reached need not be exceeded.

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* J. Stuart Mill, *Principles*, Book I., ch. xii., § 2.

Up to this we have considered the return only in connection with the application of capital and labour. But we may also relate it to the total cost, or to the sum of the use of capital and labour and the ground rent. This return per unit of the total cost has also, of course, a maximum; after a certain point it will decrease, when there is an increasing use of capital and labour. But this point is more remote than the point where the return based on the cost of capital and labour alone reaches its maximum. Because, though from this point onward the total return increases relatively more slowly than the cost of capital and labour, for a time it increases more rapidly than the total cost, which includes the fixed amount of the ground rent. The maximum point for the return per unit of the total cost also is not fixed; it recedes further and further, if the ground rent increases.

If a ground rent has to be paid, a larger application of capital and labour on the given land is economically justified than if the land were to be had for nothing. For, although a new unit of capital and labour yields a smaller return on the old land than it would on new land of the same acreage, the use of the unit in question on the old land is more profitable because a new ground rent is avoided.

The fact that a definite increased return can be got by using more capital and labour on a given area must be taken in conjunction with the similar fact that a definite increased return can also be got by using a larger area of land. We have here, in fact, two rival means of production—use of land, and use of capital and labour. Their competition is governed by the principle of substitution. In general a certain small amount of land can be replaced by a certain small amount of capital and labour, and *vice versa*, without altering the outcome of production. The proportion of the substitutable increases depends upon the relative total amounts that are already used in production.

How much of one or the other means of production ought economically to be used cannot be determined until the prices of the two are fixed. The principle of substitution requires that the final mutually substitutable quantities of the two means of production used in production shall have the same price (§ 13). This condition, as we have seen, settles the economic direction of production and also the pricing problem. By the combination of the two means of production which the principle of substitution requires the return per unit of the total cost reaches a maximum. If the use of capital and labour on a given piece of ground is smaller than it ought to be according to the principle of substitution, the return per unit of the total cost can be increased by using more. But if the requirement of the principle of substitution is already fulfilled, a further application of capital and labour will clearly reduce the returns per unit of cost. In the first case the business is in the sign of increasing, in the second of decreasing, returns. And this is equally true if we take the application of capital and labour to be fixed and the area in question to be variable. On a definite area the cheapest production is effected. Every further extension of the area, and every reduction of it, will reduce the returns per unit of cost. The complete relativity of the idea of "decreasing and increasing returns" is thus put in its proper light. The situation, moreover, is not peculiar to agriculture. In all production the return per unit of cost must fall whenever the combination of the amounts of the substitutable means of production differs from that which is required by the principle of substitution and gives the maximum return per unit of cost.

In what proportion land and the other factors of production should be combined depends, according to the principle of substitution, upon the relative prices of the use of the land and of the other factors; and each productive factor the price of which rises must be replaced by the others. If in any country wages rise, while ground rent remains the same, we shall find the farmers reduce the number of workers in proportion to the cultivated area. If ground rent rises, the prices of the other factors of production remaining constant, the application of capital and labour per unit of the area required by the principle of substitution must increase. There will have to be a more "intensive" cultivation of the dearer land. This thesis is very important in its application to agriculture in different countries. But a further substitution of capital and labour for use of the land means a relative reduction of the demand for land. This is our second reaction to a rise of ground rents. The reaction is feeble, if capital and labour are already used so much that a further use of this group of factors of production on the same land brings about only a relatively small increase of the produce. If the substitution is carried very far—in other words, if the intensity of the agriculture is already considerable—the reaction to a rise of ground rent is much enfeebled, and we approach the condition of absolute scarcity of land from which we set out in this investigation.

To this analysis of the significance of the principle of substitution in the fixing of rent we must append certain consequences as regards our conception of the general pricing process and the position of ground rent within it.

The unit-price of the product must naturally, in a state of equilibrium, be equal to the total cost per unit of the product, and it therefore includes both the cost of capital and labour and the ground rent. This thesis, however, should be regarded merely as a necessary agreement, and should not be interpreted to mean that the cost of production, including the ground rent, is the cause of the price of the product. The price of the product and the prices of the factors of production are, as we saw, never connected as cause and effect; the two groups of prices are simultaneously determined by the independent factors of the pricing process. If in the present case we take the prices of the means of production—the ground rent and the price of the use of capital and labour—as given for the time being, then the principle of substitution says in what proportion these two groups of means of production are to be combined, or how much of them must be used to produce a unit of the product. This settles the cost of production of wheat, and therefore its price. At this price the demand for wheat is restricted to a certain amount, and this amount must agree with the amount of the product. This amount of the product is settled on the other hand by the condition that the whole available area of land, together with a quantity of capital and labour determined by the principle of substitution, shall be utilised. We thus come to an equation which determines the ground rent relatively to the price for the unit of use of capital and labour. (Further we cannot go, because the prices of the use of capital and labour are only settled in connection with the pricing process as a whole, which takes into account the rest of the demand for these factors of production.) In treating the problem thus the ground rent receives its natural position in the pricing process, co-ordinated with the other costs of production, and the direct dependence of the ground rent on the factors which regulate prices generally becomes quite clear. It need not be specially pointed out that this conception of ground rent as an integral part of the cost of production agrees very well with the ideas of practical business life.

It follows that the agriculturist must use capital and labour on land for which he has to pay a certain rent up to the point when it is immaterial whether a certain sum of money is used for further use of land or more capital and labour. Given this proportion of the two groups of means of production, as required by the principle of substitution, the price of the product is not only equal to the entire cost of production per unit of the quantity of the product, but also equal to the cost of the additional capital and labour or the equal cost of the additional land that is required for a further unit of the product.

This truth, which is, naturally, the same for both of the rival means of production, has been one-sidedly applied to the use of capital and labour. It has been sought to base the whole theory of pricing on the thesis that the price of the product of land is settled by the cost of that use of capital and labour which is necessary to get the last unit of product on a given area. It has been inferred from this thesis that the price of the product depends entirely on the cost of labour and capital—namely, on the margin of the use of capital and labour on a given area—and that, therefore, the scarcity of land means no exception to the general rule that prices of products are determined by the cost of labour and capital. This theory culminates in the famous thesis of Ricardo, that the ground rent is not an element of the cost of production or of the price of the product. This would put land in a special position as a factor of production; and a basis is thus provided for a differentiation between rent and the prices of the other factors of production which, in its consequences, must affect the whole work of theoretical economics, and is, perhaps, most clearly seen in Marshall's great work.

The real content of this theory is best seen when one realises that in the same way and with equal justice one might draw up the thesis that "the price of the products of land is determined by the cost of that additional use of the land which is needed to obtain the final unit of product on a given use of capital and labour." From this thesis one might also conclude that the price of the product depends entirely upon the cost of the marginal use of land, and that, consequently, the cost of capital and labour is not an element of the cost of production. No one can doubt that this argument is much too artificial to be taken seriously.

This equivalence of capital and labour on the one hand and use of land on the other is obvious to the practical agriculturist. It must often seem to him that the use of capital and labour is the relatively fixed factor, and the extent of use of land is conspicuously variable. But for a whole national economy—it may be said—the supply of land is given, whereas the use of capital and labour on the same land is variable. In this, however, the fact is overlooked that the ground rent can only be determined in connection with the pricing process of the economy as a whole. When we look at the exchange economy in its entirety, the available quantities of command of capital and of labour, as well as of land, must be regarded as given at any particular moment. The fixing of prices is bound up with the condition that these given quantities of the means of production shall be entirely utilised. In this respect there is no difference between capital and labour and land. Another thing is that the presuppositions of pricing in a self-contained country with an increasing population and growing wealth of capital change in the course of time, and that the amount of land is to be regarded as relatively fixed, and the quantities of the other factors of production as the more variable element. This is certainly very important in connection with the historico-dynamical treatment of the development of prices.

Each process of production is in reality to be conceived as an indivisible unity in so far as the cost of production is related to the total product of the single productive process, and includes all the costs that are required in making this total product. This is the natural starting-point of the theory of pricing. If two factors of production which may be continually substituted for each other co-operate in a productive process, one can mentally take one as fixed and divide the other into small equal doses, and thus break up the product into the parts which are produced by these successive doses. The earlier parts of the product must in that case naturally be larger than the later. The price of the last part corresponds only with the price of the last dose of the second productive factor; and thus price determines the price of the product. We may, if we choose, conclude from this that it is only the price of the second factor of production that is an element of the cost of production and the price of the product. The prices of the other and larger parts of the product exceed the price of the corresponding application of the second factor of production. The total use of this factor therefore yields a profit in excess of the cost of it, and this we may ascribe to the first productive factor, assumed to be fixed, and, if it is durable, describe as the " rent " of it; which puts this rent outside the pricing process. It cannot be denied that in this way a formally unassailable theory of prices can be framed. But the advantages of so artificial a treatment of the problem are doubtful.

When it is said that the price of wheat is settled by the cost of that use of capital and labour which is necessary to get the last bushel of wheat on a given area, we must be careful not to see in this marginal cost an objective factor of the price of wheat. The marginal cost in question is not settled until we know where the margin is: that is to say, until we know how much capital and labour can economically be used on the given area. The position of the margin may, however, as we showed, be determined by the principle of substitution when we know the prices of the rival groups of means of production. If we proceed in this way, the price of the product will again be expressed in the prices of the whole of the means of production (including ground rent). We may, of course, choose two other prices as the unknown quantities of the problem. If one takes for granted the price of the product and the price of the unit of use of capital and labour, the margin of the use of capital and labour in a given area can be determined by remembering that the last dose of capital and labour must have a price that is equal to the price of the product obtained with this dose. This settles the use of capital and labour on the whole of the land, and consequently the entire amount of the product. As this has to be equal to the existing demand for the product at the given price, we get an equation which expresses the price of the product in the price of the use of capital and labour, and the problem is solved. In this process, which comes nearest to the argument of classical economics, the ground rent can only be calculated after the main task is accomplished. This caused classical economics to regard the ground rent merely as a secondary outcome of the pricing process and put the whole phenomenon of a development of rent outside the pricing process proper.* It might be felt that here rather too far-reaching conclusions are drawn from a purely formal treatment of the pricing problem, which is by no means necessary, and may, as we have shown, be replaced just as well by some other treatment which more faithfully reflects the real processes. As a matter of fact, however, ground rent has essentially the same position amongst the costs of production as the prices of the other factors of production.

We come to the *third* reaction to an assumed rise of ground rents. This consists in an extension of the cultivated land. The conditions under which such extension is possible are clearly very important as regards the ground rent. In an old country this is, as a rule, only possible by taking up land of a poorer sort or in a worse position—land of an inferior quality. Possibly in this way a good deal of land of different qualities has already been brought under cultivation. Here, where we wish to consider the conditions of the cultivation of new land, we need not notice this. It is enough for us to compare the new land with land already tilled of a certain quality. We may then establish, first, that the cost of production would be higher on the as yet untilled land, though it bears no ground rent, than on the old cultivated land, including its rent. If this were not the case, it would be better to cultivate new land than pay rent for old.

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* See Marshall, *Principles*, Book V., ch. viii., § 2, " Restatement of the Classical Doctrines." It is obviously wrong, as Marshall observes, to represent the ground rent as a factor regulating the price of the product. But that applies also to the price of every other factor of production. The prices of all the means of production and products have the same position in the pricing problem as unknown quantities which are settled only by the independent determining factors of the pricing process, and then all settled together. We see here the one-sidedness of Marshall's idea of " reciprocal dependence."

The force of the reaction to the rise of the rent of the old land is clearly greater in proportion to the smallness with which the cost of production on the new land exceeds the old cost of production on the rent-bearing land, and to the extent of the area of the land which it becomes possible to cultivate because of a small advance of the old ground rent. If, on the other hand, it is very feeble—if any considerable extension of cultivation were only possible by taking up land with a heavy cost of production—then the rise of the old ground rent is little restricted on this side; it is regulated almost as if there were an absolute scarcity of land.

It follows that a rise of the old ground rent is the normal condition of an extension of cultivation. Nevertheless, the cultivation of new ground is occasionally possible without any alteration of the old ground rent. The breaking up of new land generally requires capital for drains, uprooting, deep ploughing, roads, etc., and to that extent it is in the nature of a production of land. This cost may be so great that at times, when capital was scarce and interest high, it could not be undertaken, and the land in question remained unused. Cultivation was confined to areas where the initial cost was not so great. This was common enough in the early stages of colonising new countries. When the interest afterwards falls, say from 12 to 6 per cent., it is possible to enlarge the cultivated area considerably. The cost of production on the new land need not then exceed the cost on the old; in fact, the extension of cultivation may be accompanied by a fall of the old ground rents. In any case, this possibility of breaking up new land is obviously a serious impediment in the way of a rise of the old ground rents.

Advances in agricultural science also may facilitate the cultivation of new land without raising the old ground rents. There may be changes which will cut down appreciably the cost of production on certain hitherto unexploited qualities of the land, so that it can compete with the older land. It is not to be expected that the various areas will be cultivated in the order that seems to be dictated by the present condition of agriculture and the national economy generally.

When pieces of land of different quality are cultivated together, the ground rent becomes a *differential rent*, based upon the difference between the amount of produce obtained with the same application of capital and labour on different pieces of land. In view of the great number of features which fix the quality of land and the vast extent and varied nature of the land, we may generally assume that there is land of every conceivable quality. The worst land taken up for agricultural purposes then has no rent, and the rent of the better land is conceived, in harmony with Ricardo's formula, as the difference between the amount of produce that can be obtained with the same application of capital and labour on this land and on rent-free land. However, this generally accepted theory of ground rent leaves a good deal to be desired in the way of clearness. It remains indeterminate how much land in both cases is to be cultivated with the given outlay of capital and labour. We might suppose that the comparison refers to two pieces of land of the same acreage. But that is impossible, because, as a rule, the area that would be suitable in one case for the given amount of capital and labour would be unsuitable in the other case. It is clear that we must take into account the fertility of the two qualities of land, and that in both cases we must choose the best combination of acreage and use of capital and labour. Which is the best combination cannot be settled as regards the better rent-bearing land until the rent (or—which comes to the same thing—the price of the product) is given. This apparently very simple conception of ground rent as a differential rent is thus rather complicated by the simultaneous action of the principle of substitution. It seems that we shall not get very far with the difference of product of the better and the worse land as the determining factor of ground rent.

But even if there were not this complication, and if we simplified the problem in the extreme by taking the amount of capital and labour that can be used on a given area, or for any particular quality of land, as absolutely fixed, we still could not take the surplus of the produce of the rent-bearing land over that of the rent-less land as an independent determining factor of ground rent; because the extent of cultivation, and therefore the position of the margin of cultivation and the quality of the rent-less land, is just as much determined by the ground rent as *vice versa*. In general the explanation of ground rent as a surplus over the amount of produce of waste land is not very satisfactory. The ground rent of land of a certain quality is in its innermost nature a scarcity price, referring primarily to this land and determined by the supply of and demand for it. The simultaneous existence of worse land that may enter into competition with the better may, it is true, bring down a little the scarcity-price, but it cannot give the ground rent an entirely different nature. The one-sided stress on the differential element is apt to give the idea that the existence of inferior land is somehow essential to the ground rent of the better. As a matter of fact, this ground rent by no means depends for its existence on the presence of the inferior land; on the contrary, it is merely reduced on that account! If in any country the last quality of land used were scarce relatively to the demand, it would have to bear a rent, and this would clearly be a scarcity-rent. We must insist that our theory of prices shall include a conceivable case of that kind. For the real nature of ground rent it is not an essential matter that there shall be rent-free land on the margin of cultivation. If any theory of prices essentially includes this presupposition, it is a proof that the theory is artificial; and we may be sure that, in spite of its formal accuracy, it does not reach the heart of the matter.

Now let us come a step nearer to reality by considering the fact that agriculture can obtain many different products on the same land. The worst land on which wheat is grown has a rent, because it could be used for growing other things, such as potatoes. The classical theory was never able to give a quite satisfactory explanation of this. Certainly the thesis that ground rent is not a part of the price of the product may even here be formally maintained. We have only to suppose that the application of capital and labour in growing wheat is, in accordance with the principle of substitution, pushed to the limit of the profitable. Here we see very clearly that a theory which thus turns on the margin of cultivation must lose an essential part of the real content of the pricing problem. The economic significance of a pricing of the factors of production comes out most clearly in the uniform regulation which it secures of the demand for the various products that are made with the aid of these factors, and in the most economical use of the factors which this implies. Hence the ground rent has the very important aim in the pricing process of restricting uniformly (relatively to the demands for the utility of the land) the demands for the various products of the land, and thus of regulating the use of the land for different purposes. This function the ground rent discharges by forming an integral part of the cost of production of every product that is obtained from that land. A number of different agricultural products compete for the use of one and the same land. The fact that this land yields a certain rent when it grows potatoes is not without bearing upon the price of wheat. On the contrary, the ground rent, since it must be the same in every branch of production, has a uniform significance for the prices of all the products of the same piece of land. It seems impossible to get a definite idea of these very important processes and connections unless, as we have done here, we take the ground rent as an equal factor of the pricing process together with the other prices.

This study of ground rent refers directly to an exchange economy with private ownership of land. Our argument is, however, based essentially only upon the necessity of restricting the demand for products of the land by a uniform pricing of the factors of production, especially the use of the land, in accordance with the general principles of pricing. Since there is the same necessity in every economy, as we have seen, our results apply in the main to the exchange economy generally. A Socialist community, owning the whole of the land and conducting agricultural production collectively, would have to count ground rent in its prices just as well as an economy based upon the private ownership of land, and would draw an income in the form of ground rent. Socialist production and ownership would no more be able to abolish "idle income" in this case than in the case of the use of capital. That Socialism might make a different use of the income does not alter the nature of the matter. The significance of ground rent as a regulator of the economically sound use of capital and labour on the land, the extent of the cultivated area, and the relative prices of the various products of the land, would be essentially the same under Socialism as it now is.

§ 30. The Pricing of Natural Materials.

As natural materials are not durable goods, we have in regard to them not to distinguish a special price of their use from the price of the goods. The prices of natural materials are simply prices of consumable articles that are found in nature. When these materials—coal and ore, for instance—are got by mining and conveyed to the consumers, they have prices; and these usually consist for the most part of the cost of the capital and labour thus sacrificed, and only to a slight extent are prices of the materials as they exist in the bosom of nature. We will now study these latter prices.

The total quantity of ore that exists in a certain mine cannot be got all at once; mining must be spread over a long period of time. Hence the value of the total amount is not simply equal to the product of the total amount and the unit-price. The value of the ore that will be got in the future must be reduced to the present at the current rate of interest: in other words, the value of the total stock is the present value, calculated at the current rate of interest, of all the quantities of ore which are gradually obtained during the working of the mine. Interest and sinking fund are yielded by the annual output on this capital value of the mine. Naturally, the interest on the capital value is in the first years the greater part of the annual charge by which the capital value is paid off, or the greater part of the selling price of the material; whereas in later years the sinking fund is the larger element. Hence in the case of a mine of long period of working the price of the annual yield of material is mainly in the nature of an interest on the capital value of the mine, and therefore, to some extent, in the nature of a price paid for the use of a durable good—a rent. This explains why the income that a mine-owner derives from his property is taken to be a rent, and put on the same footing as the rent of the land-owner.* A scientific treatment of the pricing problem in this case, however, cannot be content with analogical considerations of that kind. It must refer directly to the prices of materials, and can only regard the price of the mine itself as a secondary phenomenon.

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* The price that is obtained for the annual output as such represents the whole of the returns of the ownership of the mine. This sum is, if the mine worker does not own the mine himself, paid to the owner in the form of "royalty." This royalty serves both as liquidation of and interest on the actual capital value of the mine. The distinction that Marshall makes between "rent" and "royalty" seems, therefore, one that cannot be sustained (*Principles*, Book V., ch. viii., § 4, note 1).

The price of material must be settled as the price of a primary factor of production, by the general pricing process. It is, therefore, primarily, to be regarded as a scarcity-price, to be determined on the general principle of scarcity, and the special study of the pricing of natural materials may confine itself to an investigation of the circumstances which regulate the supply of these materials to the exchange economy.

The statement that the prices of natural materials are based upon the scarcity of the available quantities of them seems, perhaps, at first sight not to be in accord with the reality. As a general rule, there are greater quantities of natural materials at hand than we can use at the moment—say, in the current year. How, then, can we say that natural materials as such exist in such restricted quantities that a scarcity-price must be put on them to check the demand?

In order to answer this question, we must bear in mind, first, that the treasures of nature—the total amount of ore in a mine, for instance—cannot be got all at once. The working of a mine always takes time: as a rule, a long series of years. The annual output of ore is, therefore, much more limited than the stock of ore itself. But the period of working is not settled in advance by technical factors; it may be shortened if the costs of the necessary extensions of equipment, means of transport, sources of power, etc., can be borne. Even in regard to those primary factors of production which we have called natural materials, therefore, the limitation of the quantities available to us in a certain period is not absolute; it is, as we shall see, to some extent determined by prices. If the said means of production exist in such quantities that they suffice for getting and transporting the entire stock of ore, any increase of them for the purpose of working the mine more rapidly will mean additional cost that must be spread over the same quantity of ore. On the other hand, if we suppose that the price of the ore remains unchanged at the place of consumption, and therefore the selling price as a whole is fixed, shortening the period of working will have the advantage of securing the price of sale earlier. The mine-owner who works the mine himself has to weigh these advantages and disadvantages. The proper way to do this is to reduce all income and expenditure during the period of working for the entire concern to their present value. Every increase of the present value of the cost of capital and labour by which a still greater increase of the present value of the results of the sale of ore can be obtained, is good. Hence the mine-owner must, during the period of working, invest in his business so much capital that the final increase of the present value of the cost of labour and capital is outweighed by the final increase of the present value of the total sales which it secures.

An increase of the outlay for capital and labour cannot, of course, increase the contents of the mine, but may enable the owner to obtain its treasures earlier; and this amounts to a saving of interest. If the selling price is fixed, the present value of the selling price is equal to the total selling price multiplied by a factor which—if, for simplicity, we assume an even distribution of the working over the whole period of working — depends only, apart from the rate of interest, on the length of the period of working, and increases with every shortening of the period. Thus shortening the period always means raising the present value of the sum of sales. As this rise is clearly proportional to the selling price, any advance of this price must proportionately increase the advantage of shortening the period of working, and consequently, if the prices of the use of capital and labour remain the same, make a further shortening economical. Eevry advance of the price that is paid for the ore at the place of consumption thus makes it possible to meet the demand better.

However, the question how rapidly we ought to exploit the treasures of nature has another side. We must keep an eye to the wants of the future in regulating our present consumption. If the stores in nature would be exhausted in a short time by our actual consumption, we must clearly cut down our consumption as far as possible. In an economy based upon private enterprise this restriction of present consumption is effected by the fact that the advance in the prices of natural materials, which must occur in the future, in consequence of the increasing scarcity, recommends a certain economy with the materials. If the expected advance in prices is large enough and near enough, the mine-owners will restrict the output, and so raise the present price. Hence the prices will not at first remain constant for some time, and then rise indefinitely, but there will be a more even, though still appreciable, advance. Thus the future scarcity does not wait until the future to affect prices; it actually has an important influence on prices.

How much regard for the future private enterprise will have depends upon the rate of interest as well as upon the above circumstances. The higher the interest, so much the higher must the future advance of prices be to counterbalance the loss of interest involved in saving the treasures of nature, and therefore so much the more generous will the supply of the present be as compared with the future supply. We must further notice that we cannot tell anything with certainty as to how the future will be supplied. New deposits may be discovered, or the demand may abate in consequence of the discovery of new auxiliary resources or methods; as, for instance, happened to the demand of the iron-industry for wood-fuel when it was found that fossilised fuel could be used, at least as regards production on a large scale. This uncertainty about the state of the markets of the future means that saving the treasures of nature for the future is only profitable when the anticipated rise of prices includes a considerable premium for risk as well as interest on capital, and consequently the present supply is so much the richer. When the supply of the present with any natural material is a monopoly in the hands of a single man, it may be profitable to him to restrict the output more than would be done simply for the reasons we have given. By restricting the output he brings about a certain scarcity of the actual supply of the material to the community, and therefore a rise of present prices that is not checked by competition, but corresponds entirely to his restriction of the output. Hence the monopolistic control of the sources of natural materials tends to secure more regard for the wants of the future. When trusts make natural materials dearer, the community is forced to be more sparing with the existing supplies.

When the organised community keeps in its own hands the sources of natural materials, whether because it is organised on Socialist lines or otherwise, it confronts the problem of regulating the relative claims of the present and the future to a supply. If the national economy in question is only a part of the world-economy, and is therefore in economic relations with other communities, it will regulate the use of its natural materials, on the whole, by the same considerations and with the same regard to the rate of interest as in the above case; though, perhaps, a little more concern will be shown for the future. But in a complete Socialist system there is hardly any need to regulate the respective supplies of natural materials to future and present with a view to the current rate of interest. Just as a Socialist State has, in a sense, to choose the rate of economic progress, and thus fixes the conditions which determine the rate of interest, so the distribution in time of the available natural materials is for the isolated community which controls these materials, an indeterminate factor which the community must settle in its own way. Prices are not a definite problem before this decision has been made.

The general socio-economic object of fixing prices is to regulate the demand in agreement with the available means to meet it. In regard to natural materials the fixing of prices has, as we have now seen, also the special object of securing a proper distribution of their use in point of time, or of restricting the demand in such a way that a certain degree of uniformity in the supply is secured, at least for a time. In cases where the stores in nature are very limited, this object can be attained only in a very relative sense. It is, as we see, by no means so definite as the general object of pricing.

In our actual economic conditions the scarcity of natural materials is due mainly to the objective economic factors we have indicated. Still, it is not unusual for the State to intervene in the interest of the future, or at least to raise the actual prices, and so to regulate the distribution of the use of them in point of time. Certain measures of taxation—the Chilian tax on the export of saltpetre, for instance—have that effect. But policy may aim more directly at that object, as we see, for instance, in the regulation of the export of iron ore from Sweden. The present scarcity of natural materials is, in the circumstances, to some extent due to arbitrary rules.

The scarcity of natural materials depends not only on the extent of the use of the deposits, but also upon the extent of the working of deposits of different yield. When two iron mines with the same quality of ore supply a foundry, the prices of the ore in the mines must be so regulated that the ores will have the same price at the foundry; the difference in price must cover the difference in cost of mining and transport. If there are only these two mines, the ore in the natural state must have a price, even in the inferior mine from the above point of view, if a sufficient limitation of the demand can only be effected by means of a proportionately high price at the works. The intensity of the working is settled in the case of both mines by the prices, for reasons given above. Hence, although here the differential principle is at work in fixing the price of the ore at the different mines, both prices of ore are, in the main, scarcity-prices.

If there are many mines, and we suppose that the price at the works just covers the cost of capital and labour of the ore of the poorest mine—the " last " of the actually worked mines—the price of the ore in this mine is equal to zero, and in the other mines equal to the difference by which the cost of capital and labour in them exceeds the cost of capital and labour in the " last." Naturally, this does not prevent the prices of the ore in these mines from being primarily scarcity-prices, fixed by the inadequacy with which the demand is met. If we were to argue here on the analogy of the usual theory of ground rent, we should say that the price that is paid for the ore in its natural condition does not enter the price at the works, and consequently not the price of the various iron products. Because the price of the ore at the works is settled entirely by the cost of capital and labour at the " last " mine, where nothing is paid for the ore. Against the formal correctness of this statement we should say just as little, but against the representation of the pricing process which is expressed in it just as much, as in the case of ground rent. At all events, Marshall's attempt to distinguish between the two cases, and recognise the prices which are paid for the materials in nature as part of the prices of the products, but not recognise as such the prices that are paid for the use of natural land, must be considered unsatisfactory.* But it is very instructive that even Marshall finds himself compelled to recognise the prices of the natural materials in their natural condition as integral parts of the prices of the products. That cuts the ground from under the whole of his dualistic theory of the pricing problem. The price of natural materials is a pure scarcity-price, not affected by any efforts or sacrifices. If such a price must be recognised as part of the cost of production, Marshall's idea of the cost of production can no longer be maintained. The necessity of the general and objective idea of cost of production which is the basis of our account of theoretical economics is then seen very clearly.

When an increased demand for iron sends up the price of ore at the place of consumption, the price of the ore rises at every mine. If there are several unworked mines with somewhat higher costs of mining and transport, the advance in price is bound to extend operations to these pits. The resultant modification of the scarcity will put a check upon the rise of the price. Thus, in addition to the already mentioned reaction of a more intensive working of the existing mines and, consequently, shortening their period of exploitation, the rise of price provokes a second reaction, which consists in an extension of the mining of ore to mines that were formerly worthless and idle, with a higher cost of capital and labour. We can observe this reaction at every high conjuncture, when mines that had been idle, or had been abandoned on account of low prices, are set to work.

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* *Principles*, Book V., ch. viii., § 4.

The significance of the prices paid by consumers for natural materials in regard to the supply of them is seen most clearly when we give the quantity of the materials that can be produced at any price—when, in other words, we take the total production to be a function of the price. In order to appreciate the development of prices, we must know the form of this function, at least in the vicinity the existing price. The elasticity of the total production —the increase of it that is caused by a slight advance of price—is particularly significant. The greater this is, the greater will be the reaction to an advance in price, and the greater, therefore, the stability of the prices.

Now that we have shown the action of prices on our supply of natural materials, we must briefly indicate the significance of the external factors as regards this supply. We have here to remember the technical development. Technical advances in the mining world, such as the introduction of the pneumatic boring machine and the exploitation of water power by electrical machinery, have reduced the cost of operations in the mine, while progress in the sphere of transport has so far reduced the cost of loading and transport that even so cheap a material as iron ore is now sent great distances. At the same time the very interesting recent development of metallurgy has enabled us to exploit ores of inferior quality. The introduction of basic treatment into the iron industry has made the enormously large quantities of phosphoric iron ores of use in the production of iron. The recent magnetic methods of preparing have made it possible to work economically immense deposits of low percentage iron ores. It is obvious how very important all these advances are as regards the supply of natural materials to civilised man. Of poor ores—of materials of poor quality generally—nature has, as a rule, a great abundance.

CHAPTER VIII

WAGES

§ 31. Ricardo's Theory of Prices and the Socialist Theory of Value.

IF we care to glance over the confusing mass of contradictory, vacillating, and confused ideas as to the problem of wages which are at present found, not only in political and social discussions, but even in scientific studies, we find it particularly necessary to go back to Ricardo's theory of prices, which was the starting-point of so many of the lines of development of modern economic thought. We have already referred several times to this theory. Now, at last, we are in a position to get a more complete idea of it.

In order to be able to understand it aright, we must remember that it purports to be a price-theory based on cost of production, and that such a theory is, logically, only possible when there is only one single factor of production to be taken into account, or when, at least, the various co-operating factors of production have prices that are fixed in advance relatively to each other. Otherwise any "cost of production" theory has to leave open the question how the relations of the prices of these factors to each other are determined, and it can, therefore, never be a complete theory of pricing. Hence Ricardo proposed to reduce the various factors working together in actual production to a single one, so that he could thus explain the whole pricing of commodities by their cost of production.

English political economy has, since Adam Smith, distinguished three factors of production—land, capital, and labour. We saw in the previous chapter how

Ricardo succeeded in excluding the first of these factors from the problem of pricing. On the margin of work no ground rent is paid; and, according to Ricardo, the whole pricing process takes place at this margin. Hence the use of land is not a factor of the pricing process. The chief categories of the means of production are thus reduced to two.

The use of capital clearly cannot be cut out of the pricing problem in the same way. Here Ricardo, determined to reduce the factors to one, made a still bolder assumption. He assumes that the use of capital that is required in any production is always proportional to the labour employed in it. On this assumption, obviously, the products would be exchanged in proportion to the amount of labour expended on them. The prices of the products would be proportional to these amounts of labour, and could be expressed in the same unit as that which serves as a measure of labour. The effect of this was that the theory of pricing need take no further notice of capital as a separate factor of production.

But to trace the whole fixing of prices to a single factor of production a further construction is required: the reduction of all sorts of labour to a common measure. That labour varies considerably in quality is a fact that cannot be overlooked. A theory that would put all labour on the same footing, and would therefore assume that any quantity of labour could be measured by the number of hours worked, would clearly go too far away from reality. It was, however, not necessary for Ricardo's purpose to assume this. He is content to assume that the reduction of labour to a common measure is possible by using a given and invariable scale of reduction. Professional work is then merely to be considered a definite multiple of "normal labour," and all costs of production can be expressed in a quantity of normal labour. The assumption of a fixed scale of reduction thus means the exclusion of the relative pricing of the various kinds of labour from the pricing problem.

Thus by means of three great simplifications—the elimination of ground rent, the postulating of a proportion between the use of capital and the amount of labour, and the assumption of a fixed scale of reduction of the various sorts of labour—Ricardo succeeds in reaching a theory of prices which can be expressed in the simple thesis, that the prices of all products are proportional to the quantities of " labour " required for their production. In this, therefore, the quantity of labour is the general measure of prices. According to Ricardo, the price of products includes both wages and " profit " (for the co-operation of capital), but not ground rent. The rules by which the price of production is divided between labour and capital are the subject of special studies of Ricardo's, to which we will return in the following sections.

This very abstract, but logically very thorough and acute, theory of prices of Ricardo seems to have been generally misunderstood. Ricardo saw clearly that his assumptions only held good as approximations. He regarded them as justified when there was question of getting a first general view of the social process of fixing prices.

This relativity of his assumptions and the aim of his whole construction generally were lost sight of by readers who could grasp only the broad lines of his system. Where Ricardo had regarded a proportionality of the prices of commodities to the required quantities of labour as a general result of the action of supply and demand, his followers saw a necessary equivalence of value and quantity of labour. Ricardo's theory was used to support the theory that labour is the source of all value, and gradually his readers descended so far as to conceive value as a quantity of labour embodied like some mystic fluid in products. The " labour theory of value " which was based upon these serious misunderstandings of Ricardo's theory of prices hardened in the course of time into a lifeless dogma. In this form it was taken over by early Socialism, and was made the basis of a so-called Socialist theory of value with scientific pretensions. In view of the ridiculously exaggerated importance which has been given to this theory, not only by the apostles of Socialism, but even by its opponents and scientific critics, it seems worth while explaining the real origin of the theory.

In Ricardo's theory of prices the "hour of work" serves as a unit of price in much the same way as the shilling or the franc does in real life. Every commodity costs as many hours' work as were needed to produce it. Of this quantity of hours of labour the worker receives a part as wages, and the remainder is the profit of the capitalist. The worker who has worked for an hour receives a wage of, say, three-quarters of an hour, the other quarter going to the capitalist for the use of his capital. The Socialists have used Ricardo's theory to support their thesis that the worker has "a right to the full results of his labour"; but they are quite wrong. It is in no sense a consequence of Ricardo's theory that the wage for the hour's work shall be a full hour's work. The thesis that the value is equal to the work, and the claim based on this that labour has a right to the full value of the product as wages, are—whether one agrees with them or no—in an entirely different sphere from that of Ricardo's assumptions of an approximate proportionality between use of capital and quantity of labour, and therefore between price of product and quantity of labour. This was long obscured by the fact that German science, in spite of all its severe criticism of the Socialists, clung to the belief that they were only drawing conclusions from Ricardo's theory of value. Even an expert like A. Menger and a critic like Böhm-Bawerk gave a certain support to this idea.*

The Socialists were much more justified in claiming the authority of Ricardo for the reduction of the various kinds of labour to a common measure. With his assumption of a given and invariable scale of reduction. Ricardo excludes the whole competition of the workers in different trades and places, or of skilled and unskilled labour, as an element to be considered in connection with prices. But Ricardo is merely studying how prices vary with the general development of society, and he assumes that the proportion between the prices of various kinds of labour may be taken in this development as approximately invariable. For the Socialists the theoretical assumption once more becomes a practical postulate: labour of different qualities shall be valued on objective grounds, not according to a rate of wage which changes with the state of the labour market. This is, in point of fact, the deeper meaning of the Socialist program of abolishing the wage system.

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* A. Menger, *Das Recht auf den vollen Arbeitsertrag*, 2nd ed., Stuttgart, 1891, p. 54, and Böhm-Bawerk, *Kapitalzinstheorie*, Innsbruck, 1885, p. 362.

Socialism condemns the whole of the present wage system as immoral because it treats the worker as a commodity on the market, since it determines the wage of the individual worker, not merely by his ability or the amount of work done by him, but also according to the number of other workers who seek employment on the labour market. In opposition to this regulation of wages according to the state of the market, Socialism demands for the worker an income fixed on objective and ethical grounds. The principles for determining this are generally obscure and uncertain. A reduction of skilled labour to "normal labour," with more or less regard to the claims of professional work, is set up as the norm for the payment of the workers; or it is claimed that the worker shall receive for his labour a return that guarantees his maintenance, and thus wants are set up as the correct standard of wages. In these systems a graduation of wages—according to skill or employment, for instance—may be recognised as just, but only from objective and ethical reasons, on no account according to the state of the market. It is directly opposed to the fundamental tenets of Socialists that any attention should be paid to supply and demand of labour of any kind in fixing wages.

Having now shown the real meaning of Ricardo's theory of prices and the Socialist theory of value which is (wrongly) based upon it, we will now turn to the criticism of these theories. Ricardo's theory is, as we saw, not a direct presentment of reality, but a much simplified view of it, obtained by a series of abstractions. The theory cannot be condemned on the ground that it does not correctly agree with our observations of reality. Every theoretical investigation must begin with abstractions. The value of the theory depends mainly on the question whether it is possible to build on the foundation provided: whether the modifications of the theory, which are required to adjust it to reality, can be accomplished without involving us in contradictions of the fundamental ideas of the theory.

Now, this is impossible in the case of Ricardo's theory of cost of production. The theory is, as we saw, essentially based upon a reduction of the various co-operating factors of production to a single factor. We have already given the assumptions that are required for this purpose. As regards the significance and justice of the first of these—the elimination of ground rent from prices—we refer to the previous chapter. As regards the proportionality of use of capital and use of labour, we must recall the facts given in § 23. They show clearly that the relative use of capital in modern production diverges very greatly from such a proportion. The assumption of a fixed scale of reduction for various sorts of labour shuts out the important chapter of the relative fixing of the prices of these different kinds of labour from the theory of prices. It is, clearly, impossible to retain such assumptions. And, the moment we abandon them, the essential basis of Ricardo's whole structure is destroyed. The reduction of the factors of production to one, which is the real nucleus of the theory, is then no longer possible. The moment we recognise, for instance, that different trades work with different relative quantities of capital and labour, we have to deal with at least two factors of production, capital and labour. Every further approximation to reality increases the number of the factors of production involved in pricing: for instance, the recognition of differences of kinds of human labour, and a study of those cases in which the land bears a real scarcity-rent, and the ground rent is, consequently, an integral part of the prices. Any theory of prices is bound to reckon with the existence of several means of production, each of which occupies a more or less independent position in the pricing process. For such a theory Ricardo's theory of the cost of production is of no value whatever. The path taken by Ricardo leads nowhere. We have to turn back, to abandon his theory of cost of production, and, as we have done in the present work, choose a quite different method, one that takes into account the existence of a number of separate factors of prices.

It is obvious that with this recognition of the complete and fundamental inadequacy of Ricardo's theory of costs the caricature of it—the Socialist theory of value—proves useless, and we will not waste any time on the hair-splitting of its defenders.

The Socialist demand for the abandonment of the wage system is based, as we have seen, on the theoretical view that an exchange economy would be possible in which the prices of the various kinds of labour could be fixed without regard to the state of the market, and therefore without regard to the relative scarcity of the available supplies of labour of various kinds in relation to the demand for them. This is opposed to the principle of scarcity, and therefore to the fundamental conditions of any exchange economy governed by the general economic principle. A socialist State could only pay different wages than those we pay on condition that it could bring about a state of the market that permitted such wages.

§ 32. The Pessimistic Theories of Wages.

The development of theories of wages in the first half of the nineteenth century was governed to a great extent by a love of general, extremely simple formulæ, preferably of an arithmetical character; and for these the authority of Ricardo was claimed.

According to Ricardo the article produced on the margin of working is divided between capital and labour. The share of the worker, wages, is, therefore, primarily governed by the state of the market. But there is also a *normal price* of labour, and this is determined by its cost of production. This normal price, or "natural wage," is equal to the cost of maintenance of the worker and his family. The measure of this cost is, according to Ricardo, the ordinary standard of life of the worker.

But with growth of the population the margin of working is, according to Ricardo, bound to shift generally, so that worse and worse land is taken up. Let us suppose that the product of ten hours of work on the margin of working was formerly divided in such a way that the worker would receive as wages the product of seven hours' work, and the capitalist the product of three hours' work as profit. When it becomes necessary to break up inferior land, the product of the hour's work is reduced, and the product of seven hour's work no longer suffices to maintain the worker. The consequence is that the normal wage rises from seven to, say, eight hours, and the profit is, consequently, reduced to two. This reduction of the profit, however, cannot go on indefinitely, as in that case every motive for accumulating capital would disappear. In those circumstances the scarcity of capital will at any rate force the market wage back to the normal. An increase of population that necessitates the taking up of inferior land is for this reason injurious to the working class. As long as the necessaries of life can be imported from abroad, however, this effect of an increase of population may be avoided. The insistence of the working class on a customary high standard of life may also, to a certain extent, prevent the use of a high market wage for effecting a harmful increase of population.

The theory of Ricardo was afterwards, especially with the collaboration of the German Socialist Lassalle, turned into a sterile dogmatism, according to which the wage has in the actual social order a tendency to fall to the minimum required for the existence of the worker.

This "iron law of wages" could not, as is known, be sustained by modern Social Democracy; naturally enough, as, according to it, only a restriction of births on the part of the workers would really be of any use. All other efforts to raise the working classes would be useless.

The actual development of the standard of life of the working classes in the nineteenth century, in the civilised countries of Europe, gives little support to the iron law of wages. Wages have risen; and the rise has by no means been absorbed in a more rapid growth of the population. On the contrary, precisely in the higher strata of the working class we find an unmistakable tendency to birth-control and the use of the wage to raise the standard of life. We must not forget, however, that these favourable developments are confined mainly to the most advanced countries, the people of our own race, and to some extent to the upper strata of the workers of these countries. In the whole of the rest of the world, as Marshall has very well said, the iron law of wages still rules, and wages generally only cover the cost of rearing and maintaining a class of workers of inferior capacity.* The possibility of raising the standard of life of the workers above the bare minimum of existence depends upon such a number of individual and social factors that any attempt to deal exhaustively with this subject in a single formula should be put down as unscientific and entirely useless.

When we realise clearly that the "working class" is not the homogeneous mass of which the primitive theory and political orators love to speak, but is really composed of a large number of strata of population with very different standards of life, we see at once the untenable character of the old idea of a minimum of existence, or a "cost of production of labour," as the lower limit of wages. In our actual economic conditions it is quite possible that a certain type of labour is permanently condemned to a wage which does not enable the worker to rear a family, educate his children, and fit them for work: a wage, in fact, that hardly covers the worker's own current cost of maintenance. Obviously, the "cost of production" of such labour has to be covered somewhere. It may be borne, wholly or partially, by the higher strata of the workers, by the farmers, or by middle-class families, or, finally, by the State or the whole community. There are certainly various trades in modern life, especially of women, which hardly supply the workers with current maintenance, and are not in a position to pay the costs of production of the workers themselves, but must be continuously fed by accessions of labour from other strata. In these trades the payment of a "natural wage," in Ricardo's sense, is not necessary. These circumstances, which are essential for a knowledge of the real nature of the very important problems of the theory of wages, are bound to be completely hidden from us as long as we adhere to the fiction of "labour" as a homogeneous factor.

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* Marshall, *Principles*, Book VI., ch. ii., § 3.

In regard to the market price of labour Ricardo had taught, as we saw, that it depends upon the actual condition of supply and demand. He conceived the demand as a quantity determined by the amount of capital in the country. According to him, the demand for labour increases in the same proportion as capital. In times when the capital increases more rapidly than the population, the market price of labour is, consequently, higher than the cost price. If, on the contrary, the capital increases more slowly than the population, the market price of labour may fall below the cost price; though this must then retard the growth of population.

This idea of Ricardo's of the significance of capital as regulator of the market price of labour was similarly turned into a dogma by his followers, and was expressed in greatly simplified arithmetical formulæ as the all-powerful natural law of the economic life. This was the origin of the much discussed "wage fund theory." Capital was regarded as a definite fund at any time out of which wages had to be drawn; hence the average wage must be determined by simply dividing the wage fund by the number of workers. The divisor, the number of workers, is in the course of time, in accordance with Ricardo's idea, determined by the cost of production of labour. The wage fund theory, therefore, does not displace the older theory of the "natural wage" or the cost price of labour. It refers to the actual market price of labour, but says that this is absolutely determined by the wage fund. Very far-reaching practical consequences are drawn from the theory. The workers can influence wages only by controlling their own number. Other efforts to raise their wages, especially the forming of unions, can at the most only help small groups of workers, and only at the expense of the other workers whose share of the wage fund is proportionately reduced. Naturally, the organised labour world declined to take seriously this pessimistic idea.

Criticism of the wage fund theory should start from the important fact that the whole theory is based upon quite confused ideas as to the nature of the process of production. The study of the history of the theory is useful in so far as it brings out clearly the great importance of representing the productive process as continuous, as we have tried to do in § 4. The wage fund theory is still under the influence of the old idea of Adam Smith, that an accumulated stock of goods is a prerequisite of production. All attempts to give more precise expression to the idea of a wage fund have been unable to cover the lack of a clear analysis of the productive process itself, from which the theory suffers.

Again, the idea of the theory that the quantity of labour that can be employed at a certain wage is arithmetically determined by the quantity of capital is false. The objection to it is, first, that labour may be used in industries which require different amounts of capital. The distribution of the workers amongst these trades is itself a problem of the pricing process, and therefore cannot be taken as settled in advance. It is clear that upon it depends the number of workers who can be employed at a certain wage according to the wage fund theory. A second objection is that, according to the principle of substitution, labour and capital can be combined in different proportions to produce the same article. It follows from this indeterminateness of the methods of production that the time which the "wage fund" is supposed to last is—however we choose to define the wage fund—not definite, and that, therefore, for this reason also the division on which the theory builds is in reality indeterminate.

§ 33. Modern Optimistic Theories of Wages.

Adam Smith opens his chapter on wages with the remark that the product of labour is the natural recompense or wage of labour. In modern conditions the worker has to yield part of his product in the form of ground rent and profit to the land-owner and the capitalist. The rest of the product of labour is the wage of labour. In this idea there was the germ of a theory that sees the chief determining factor of wages in the productivity of labour, and thus puts in the foreground the dependence of wages on the product of labour.* This clearly grants the workers themselves an influence on the amount of wages; by their own efforts and skill they can improve their position. The optimistic colouring which is thus given to the modern theory of wages is in contrast with the pessimism of the earlier theories, according to which the height of the wage was mainly settled by external circumstances, and the workers could not influence it except by birth-control.

That wages must in some way depend upon the product of labour is a very natural, and as we shall see, a very useful idea. But we must be careful not to take the connection so simply as to represent the wage as the product of labour after deducting what must be paid for the co-operation of the other factors of production. This sort of reasoning leads to a one-sided "residual theory," according to which the wage is taken to be the "residuum" that remains of the outcome of production when the employers and the owners of the land and capital have had their share.* If such a residual theory is to have any meaning at all, it must assume that the shares of the other factors of production can be separately settled before the residuum is clear. In view of our inquiries into the nature of the general pricing process this is impossible. As a matter of fact, all the factors of production are on the same level in the pricing process, and their shares in the total product are determined together by the co-operation of all the given factors of pricing. It is only the pure profit of the employer—and this is not to be conceived as a normal price of the co-operation of a factor of production—that may, if one cares, be described as a residual income.†

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* Of early representatives of this view we may name Leroy-Beaulieu in the sixties (*Traité d'Économie politique*, Paris, 1896, tom. ii.), and Walker in the seventies (*Wages Question*, London, 1891, chs. viii. and ix., and p. 411).

In the further development of the productivity of labour as the determining factor of wages the difficulty arose that, as a matter of fact, an increase of the product that is obtained by an increase of labour does not necessarily as a whole fall to labour; generally, it is also to the advantage of the other factors of production. As a rule, the increase of labour leads to the appearance of a new market with a relatively strong demand for the other factors of production, and therefore with a relatively worse position for labour. In that case labour cannot keep the full increase of production for itself. Hence the wage depends not only upon labour itself, but also on the other factors of production; in general, on the relative supply of the economy with the various factors of production and, in a word, on the state of the market. The productivity of labour is thus not an objective factor, conditioned by the nature of labour alone, and it is, therefore, not to be regarded in that sense as the determining factor of wages. Once this fact is clear, the theory of productivity loses its immediate theoretical simplicity and practical applicability.

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* Compare Jevons, *Theory of Political Economy* (London, 1879), pp. 292-6: "Every labourer ultimately receives the due value of this produce after paying a proper fraction to the capitalist for the remuneration of abstinence and risk" (see Walker, *Political Economy*, 3rd ed., London, 1899, ch. v.).

† Compare Clark, *Distribution of Wealth* (New York, 1908), p. 204.

Recent economics has given us a further development of the theory of productivity by trying to assign the share of each single means of production in the outcome of production by defining its "marginal productivity." This has led to giving a greater prominence to the principle of substitution in dealing with the pricing problem, and to laying an undue stress on the assumption that one factor of production can continuously replace another.

A further objection to a theory of wages that builds upon the idea of marginal productivity, and, indeed, to every price-theory that is based on it, is that marginal productivity itself is not an objective factor of the pricing problem, but is one of the unknown quantities of the problem, and is in the same position as the other unknown quantities. As long as we confine our attention to a definite branch of production, in which a single article is produced, it is possible to regard marginal productivity as at least an independently determined idea. The "marginal product" is a certain concrete part of the total product. But if the same labour is used in several different trades, clearly this concrete conception of the marginal product is no longer possible. The marginal productivity must be the same in every trade, and therefore can only be conceived as a part of the prices of the various products. But these prices are subject to, amongst other things, the condition that the labour in question must have the same price in all trades. Its marginal productivity, therefore, cannot be defined as anything else than precisely this price, because this price represents precisely the contribution of the labour in question to the price of the product. The thesis that the wage is determined by the marginal productivity of labour thus loses all independent meaning.

Finally, we must bear in mind that to trace wages to the marginal productivity of labour gives us no idea of the dependence of wages upon the exertions and skill of the workers. What effect an increase of the efficiency of labour has upon its marginal productivity is certainly not obvious; it is really a question that belongs to the very heart of the wages problem. The efficiency of labour is an idea with reference to the technical usefulness of labour. "Productivity" is also often taken in this sense. But marginal productivity refers to the state of the market, and is only determined by pricing. There is always some danger of this important distinction being forgotten, and of inferring at once an increase of the marginal productivity of labour from an increase of its efficiency.

That an increase of the efficiency of labour brings an increase of the worker's income is only one side of the modern optimistic theory of wages. The theory often adopts the further thesis, that the capacity of the worker increases with his income. On this view there is a reciprocal action between the efficiency and the income of the worker. This reciprocal action opens out the prospect of a steady rise of the standard of living of the working classes, and thus the belief in it gives the wages theory a strong tinge of optimism.

The social-political tendency which raises the worker's income to the position of chief determining factor of his capacity has been chiefly propagated in the works of Brassey and Schoenhof.* Scientific criticism of this school has to point out, first of all, that the effect of wages on the worker's standard of living, and therefore on his efficiency, depends upon quite a number of factors (climate, race, mental characteristics of the community, individual character of the worker, etc.), and that, therefore, an increased activity of labour in consequence of an increased income can only be expected in a conjunction of favourable circumstances; that, moreover, a rise of the individual worker, still more of whole sections of the working class, as producers must, as a rule, take a considerable time. On the other hand, probably we ought—at least in Western civilisation—to lay some stress on that significance of a high wage which makes its appearance in a keener selection of the best workers and the consequent stimulation to greater efficiency. We must, however, be on our guard against a naïve belief in the spontaneous development of a higher efficiency in the workers. This result is now best attained by deliberate and scientifically thought out schemes on the part of the leaders of industry.

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* Brassey, *Work and Wages*, London, 1872; Schoenhof, *The Economy of High Wages* (London and New York, 1892).

It should not be overlooked that this optimistic theory of wages can also be examined on its obverse side: if wages fall, the efficiency must in the long run be reduced, and this would lead to a tendency toward a further drop of wages. The cumulative reciprocity may thus make itself felt in a negative direction.

§ 34. The Position of Labour in the Pricing Process.

A general theory of wages must start from the fact that labour is a factor of production, and the wage is the price of this factor of production in the general pricing process. Only in this way is it possible to incorporate the theory of wages as an organic part of the single theory of pricing.

The demand for finished products is partly, on this view, directly or indirectly, a demand for labour. Hence the wage is an expression of the valuation of the relevant labour on the part of the consumers or, more generally, on the part of the demand. This point of view must be the nucleus of the theory of wages. Now, in every unit-period the total demand for the elementary means of production is equal to the total income: that is to say, equal to the total output of production. In the same proportion as the demand for the various means of production is distributed, this total income, or total product, also is distributed. We are, therefore, justified in saying that the total income of labour is equal to the share of the total result of production that corresponds to the co-operation of labour. This formula has the advantage of bringing out the dependence of the income of labour upon the outcome of production. Only the word "share" must be understood aright: that is to say, the share must be conceived as a quantity to be determined by the pricing process. Formulated and interpreted in this way, the theory of productivity is not opposed to any theory which conceives wages as an issue of the general process of fixing prices.

The price of labour is settled by its relative scarcity, like the price of any other factor of production, or by the supply of it relatively to the demand. Hence this scarcity cannot be measured simply from the point of view of the supply; it must always be considered in relation to the demand. And the total demand depends upon the total production, and this in turn on the total amount of work done. It is particularly necessary in studying wages to emphasise this general dependence of the income of the individual factor of production upon the total outcome of production; because the total social exertion is not given with the number of the workers, but depends upon the will of the workers, and because the dependence of wages upon the total issue of production often lead the workers astray in their efforts.

In the most general sense the factor of production "labour" is to be regarded as one of the two chief categories of personal services; the other is saving, or "waiting." Labour in this general sense is, however, very far from being a single category. Besides labour in the ordinary sense, it includes the work of employers*—which can easily be distinguished from what we have called the pure profit of the employer, though in practice it often comes very close to it—and the work of the independent artisan and of the farmer, as well as the services of the liberal professions and of officials. Even what is called "wage-labour" is by no means a sharply defined factor of production. It includes the labour of employees in industry and commerce as well as the great mass of what are usually called the wage-earning workers. Even this last category is not so sharply defined as is often assumed in theoretical and political references. The variations of wages and work even within this class are very great. There are pronounced differences in standard of living, and in all moral, intellectual, and social standards. The theory of wages must take this into account if it is to avoid the fatal error into which it has sometimes fallen, in its effort to secure the utmost simplicity, of regarding labour as a single factor of production and the working class as a homogeneous mass. We certainly get a much more correct idea of the reality when we take the supply of labour, in the same way as the supply of land, as a mass that breaks up into such a large number of kinds and qualities that it is possible to pass continuously from the lowest stage to the highest.

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* [The German word ("Arbeit") means both "labour" and "work," and the inexpert reader may avoid some confusion by remembering this.]

Work is done either directly for consumers or primarily for employers. The distinction is not important as regards the theory of prices, because even in the second case the demand for labour is, in the long run, mainly determined by the demands of consumers. In the first case the truth of the thesis that the price of labour is an expression of the valuation of it on the part of consumers is seen at once. But the principle applies also in the main to the second case. The employers are then the immediate purchasers of labour. But they may, even when they, as we shall see in the next section, have a certain influence on the nature of the demand, to some extent be regarded merely as middle men between the workers and the eventual purchasers. In an ideal pricing scheme the employers receive only the necessary return on their necessary exertions, and labour receives, like the other factors of production, the price that is bound to be paid according to the principle of scarcity. In this sense the wage paid by the employers is settled by the scarcity of the labour in question relatively to the demand for it just like the wage paid directly by consumers. However, in the incessant movements of the actual economic life there are deviations from this ideal scheme, and wages may in certain trades or places or businesses be higher or lower than they would be on the ideal scheme. Undoubtedly labour, as an element of the pricing process, has certain special features which cause such irregularities in pricing. But just as the position of our imaginary ideal market has great practical significance in regard to real wages, so we have to keep very carefully in mind in theory the prices of this ideal market, and to put the question: What wage would such and such a class of labour get if it received precisely what the state of the market justifies, and no more?

It is not possible to give here a theory of wages worked out in full detail. We must confine ourselves to making clear the general outline of such a theory. The work of filling this up with a detailed description, based upon a comprehensive mass of facts (which are, unfortunately, still too scanty), must be left to special research. Our main task must be to present the theory of wages in its organic connection with the general theory of prices, to consider wages in their dependence upon the entire pricing process, and especially upon the other factors of production. In this section we have first to show in detail the general position of labour as a factor of production and as an element of the pricing process.

For this purpose it is first necessary to emphasise the distinction between work and the worker. Work or labour is the service of the worker. There is here, therefore, a distinction analogous to that between durable goods and their utilities. We have already seen how important this distinction is. The distinction between labour and the worker is hardly less important, and overlooking it leads to a good deal of confusion in discussing wages. But the relation between work and worker has certain peculiar features. Whereas the amount of the utilities of a group of durable goods is settled by the amount of the goods themselves, this is not the case with labour; for the use of the worker depends partly upon his will. The amount of labour offered is thus, in a sense, an independent quantity determined, not only by the number of the workers, but also by other factors over which the workers have the deciding influence.

The utilities of durable goods cannot, in dealing with the general process of pricing, be taken as primary factors of production, because they can be reduced to the durable goods themselves and the capital-disposal required for utilising them; and the durable goods in turn can be reduced to the means of production that are required for making them. This connection is essentially of an economic nature, and is a necessary part of the pricing process. With regard to the relation between labour and worker, it is otherwise. The relation between the amount of work done and the number of workers is not of a purely economic nature, and the worker himself cannot be regarded merely as the issue of an economic productive process. Hence labour can and must be regarded as a primary factor of production in a first study of the pricing problem, and the quantities of the labour offered, of various kinds, must be conceived as objectively given elements of the pricing process. It then remains to complete this theory by a study of the general factors which connect the quantity of work with the number of workers or determine this number. This will afford an opportunity of investigating the eventual effect of the height of the wage itself upon the supply of labour and workers. We have, therefore, here to proceed in our usual way: in the first stage of our treatment of the pricing process to take for granted the quantity of a certain factor of production, then show the elements which determine this quantity, including, especially, the price of the factor of production itself, and determine their influence as regards prices.

The factor of production "labour" must chiefly be regarded as *the disposal during a certain period of labour of a certain quality*. What is paid for this disposal is the *wage*. This definition holds good even if various ways of calculating the wage are selected which (such as piece-work or bonus-work of one sort or other) aim at securing the highest degree of intensity, or of quality.

The worker who sells his labour derives his *income* therefrom. This income must be accurately distinguished from wages. The wage is, it is true, a very important element of the worker's income; but there are other elements in it, especially the steadiness of employment of the worker. This, again, clearly depends upon the worker himself, upon his moral and physical strength and his health, and also upon the demand; in the long run, therefore, upon consumption, but directly upon the management of the business in which he is employed. Further, it is much influenced—which is often overlooked—by the entire organisation of the labour market and the methods of covering the demand for labour. The worker's income may be reckoned for a day, a week, a year, or his whole life. In his income for the whole of his life the duration of his full capacity for work is obviously an important factor.

For a single factor of production there is on an ideal market a single price. A general tendency to this uniformity of prices is seen in the actual labour market in regard to the "disposal during a certain period of a labour of a certain quality"; though, naturally, there are many opposite tendencies and other obstacles to complete uniformity. But there need not be this uniformity, either in regard to the prices of productive work or to the income of workers earning the same wage. This shows again that we must always take the factor of production labour in the sense in which it is taken here.

The wage and income of the worker are, therefore, two different magnitudes; their variations need not be parallel, and they hold different positions in the pricing process. The wage is strictly a part of the cost of production, a means of restricting the demand; and, of course, an element of the worker's income. The employer naturally gives his attention to limiting the cost of production, and only reduces wages as far as it is required for this purpose: the interest of the worker is necessarily chiefly directed to the income which he can get by his work. If we wish to regard labour, or the worker himself, as the result of a productive process, and so connect the supply of labour with the cost of production, the income of the worker is clearly the decisive element; we must ask to what extent this income covers the cost of production of labour.

We have already seen in our general study of prices that in regard to a consumable good the price of the good and the price of its use are one and the same thing. The price of the good serves at once to restrict the demand and to stimulate production. In regard to durable goods, on the other hand, there is one price for the good itself and another for the use of it. The latter serves to restrict the demand; the former to stimulate production. If we insist on regarding the worker as a product, he must in this respect be put on the same footing as durable goods. The price of the use of labour is the wage: for the worker himself there is no selling price, but his total life-income is the price that stands against the cost of production of labour and must pay it, if the productive process, considered from the purely economic point of view, is to pay its way.

In regard to wages we distinguish between the *wage paid in kind* and the *money wage*. The once customary wage in kind has been gradually replaced by the money wage as the monetary economy developed. This development was supported by socio-political legislation, as payment in kind often made it difficult to recognise the real nature of the return for labour, and restricted the economic liberty of the worker. We must, however, bear in mind that, even where the wage is paid entirely in money from a popular point of view, labour receives certain advantages which economically must certainly be reckoned in the wage, though the worker has no right of choice in regard to the form of them. Such are, for instance, free houses or houses at a low rent, free heating, baths, medical attendance, etc.; also insurance contributions, pensions, and other gifts of the employer. The cost of these things is naturally regarded by the employer as wages-cost. That these sections of the wage are offered only in a definite form, and not in money, shows that in this way it is expected to promote the real welfare of the worker, and also to get better work done in the course of time for the money spent.

§ 35. The Demand for Labour.

We will first study the pricing of labour on the assumption that the amount of labour of every kind and quality which is available on the market is a given quantity—a quantity independent of pricing—of the problem; and we will throw light on the pricing problem thus defined by special attention to the factors at work on the side of the demand.

The pricing of labour is, like all pricing, governed primarily by the principle of scarcity. Hence labour of every kind and quality receives a price that must be just high enough to keep the demand for it adjusted to the available supply of the labour in question. If we take these prices as known, we can with their help—and of the prices of the other means of production—calculate the prices of the products. This settles the demand for the various products, and therefore also the demand for the various means of production, especially for labour of every kind and quality. This demand must be in harmony with the supply. If the demand for any kind of labour is insufficient, it is a sign that the price of it is too high, and—if there is no way of restricting the supply—must be reduced in order to provoke a larger demand. Conversely, if the demand exceeds the supply, wages must be raised.

Hence the wage is essentially determined by the competition of the social purchasing power for labour, and in that sense it must be regarded as the expression of the valuation of the labour in question by consumers. This thesis is the central content of the whole theory of wages, and all discussion of practical wages problems must be directly in touch with it.

In practice wages are generally settled in such wise that for a certain kind of labour a wage is fixed of the height that seems required in order to attract a sufficient demand for sufficiently qualified labour. The answer to the question whether the correct measure has been taken must be left to later experience: a scarce supply makes a rise of wages necessary, whilst an excessive supply sooner or later brings wages down. That is the way in which every large business proceeds; it cannot, of course, deal with each individual it employs about his wages. The wage policy of public bodies must in principle follow the same method. On the largest scale wages are settled in this way between the workers' unions and the employers' associations, and are then revised from time to time.

If we take the total amount of labour of every kind and quality as given, this pricing process clearly means only a distribution of the given quantities of labour amongst the various trades according to their paying capacity, or, in the long run, according to the demands of consumers. Practice really follows the same way as we have done in our theoretical analysis. It fixes experimentally, so to say, but, naturally, with a regard for latest experience, the prices of the various kinds of labour, and on the basis of these prices it calculates the prices of the finished products; but it is always ready to revise these prices according to the indications given by the actual demand. The prices which the various categories of labour receive in this way are clearly determined by the relative scarcity of the given quantities of labour relatively to the demand in complete agreement with the principle of scarcity.

The principle of scarcity makes it clear that the essential reason for particularly low wages is mainly to be found in a relative surplus of labour of the relevant kind and quality: in other words, that a restriction of the supply generally is the first requirement for improving the situation. When the needs of consumers for a certain labour is satisfied up to a point, more room for labour of that kind can be found in consumption, as a rule, only by greatly lowering the price. This is merely a sign that the demand has a limited elasticity. The acceptance of an abnormally low wage is a desperate remedy, in order to force employment for a quantity of labour of the kind in question, for which, on the normal wage, there would not be sufficient room. Any attempt to raise the position of this labour that does not start from a clear recognition of the nature of the problem is condemned in advance. Every assistance that is in the nature of an improvement of the wage can clearly only have the effect of overstocking the trade with labour and making the situation chronic.

On the other hand, particularly high wages can, naturally, greatly restrict the demand for a specific kind of labour, and consequently the range of employment for it. For labour the best situation is reached when the supply corresponds as closely as possible to the demand, and so the prices of the various kinds of labour are only expressions of its inevitable and natural scarcity.

If we assume this adjustment, the " value " of labour is, apart from this natural scarcity, chiefly determined by the quality of the demand. Changes in the customs, tastes, and purchasing power of the consumers are obviously important factors in shaping the demand, and they may have an important or—when the supply cannot adapt itself, or not quickly enough, to these changes—even a fatal influence on the state of the market for special kinds of labour.

The demand may, in general, be more or less favourable for the factor of production labour. In the first place, the demand of the community may look more directly to labour or rather to the products, in the making of which other factors of production co-operate in a considerable degree. The demand of the wealthier classes looks direct to personal labour (domestic service, luxury industries, etc.) in an especial degree, while the masses are more apt to consume articles that are produced in great quantities mainly by mechanical means. A democratic distribution of income ought from this point of view to tend to strengthen the demand for capital-disposal, and therefore proportionately reduce the demand for labour.

Apart from fluctuations in this general distribution of the demand for the various factors of production, the development of the total demand depends entirely upon the volume of the social purchasing capacity, or the total income of the community. Every circumstance that raises the efficiency of the social production strengthens the general demand for labour, and thus tends to raise the general level of wages. To that extent "labour" has a common interest—in actual life a very real, though often forgotten, interest—in the greatest possible efficiency of the entire process of production. The conception of the wage as a definite share in the total issue of social production emphasises this dependence upon the returns of the entire social process of production.

Up to the present we have started from the assumption that the demand for finished articles unequivocally determines also the demand for the various kinds and qualities of labour. In real life, however, there are various exceptions to this rule, and they modify the principle of scarcity as the determining factor of wages. The same result of production can often be obtained in different ways. One kind of labour may be replaced by another, or the productive factor labour may partly be replaced by the other factors, land and capital. We have now to consider more closely the conditions and effects of these substitutions, and we begin with the case of a

Substitution of Different Kinds and Qualities of Labour for each other.

There is, in the first place, a certain competition between different trades which, in the last analysis, satisfy the same need of consumers. For instance, the workers who are employed in the production and construction of stoves or fireplaces compete with the men who are employed in central heating apparatus and in the branches of the iron trade which work for them. The wage customary in one or the other group of workers is always a factor in the competition between the two systems, and it is not improbable that the high wages of the stove-makers have in places helped the advance of the central heating system. Where there is this competition between different trades, there are generally cases in which the two rival methods are of equal value, and a change of wage turns the scale on one side or the other. There is thus a certain connection between the wages paid in different trades.

We have then to consider the competition of different qualities of labour in the same trade. It is often possible to produce the same article with work of different qualities. We may use dear and capable, or cheap and less effective, labour, yet the economic result may be so nearly the same that businesses of both sorts may exist together. The wage problem is then to some extent indeterminate. Capable employers can make businesses with competent and well-paid workers pay well, and displace other employers, which means that the demand for the finished articles, if it is constant, looks to labour of a higher type. The workers themselves may do much the same thing when they are in a position to prevent the reduction of wages below a certain level by combination. In cases where the wage problem is thus indeterminate, there is clearly always a possibility that a policy that aims at uplifting the workers can attain its aim by proper measures.

In this connection, lastly, we must mention the competition between male and female labour. A good deal has been written about the inequality of wages, for presumably the same work, of the two sexes. The explanation is sought in different social conditions, especially in the smaller requirements of women, and in the surplus of female labour; or the whole phenomenon is traced to the familiar, but very unsatisfactory, explanation of the general injustice of society. But the main question remains unanswered. How can female labour generally and permanently receive a lower wage than it is worth—that is to say, a price below that which equilibrium between supply and demand would fix in the pricing process, and would therefore represent the valuation of this labour on the part of the demand? It is, of course, possible that occasionally female labour does not get its real market price from lack of power of resistance, of knowledge, or of mobility, but only when there is no fully effective competition of employers for the existing female labour. But when it is said that it is unjust to pay female labour less than male, it is not clear why the employer who employs both kinds of labour together does not increasingly substitute the cheaper female labour for the dearer male labour. There you have the heart of the question. If the employer—and we must assume that he acts from a purely business point of view—does not do this, we must conclude that he puts a higher value on the male labour for some reason or other, in spite of the supposed equal work. Practice does not recognise the equality of work that is affirmed by theorists. In the actual demand there is a very definite distinction between male and female labour, and that is the decisive factor. Where male and female labour work together in a trade, we quite generally find a differentiation in their employment. The rule is that men and women do different kinds of work in the same trade, and so get different wages. Even when the employment seems externally to be much the same, the demand turns for various reasons, to a certain extent, to male labour. There are certainly many solid reasons for this differentiation; though, objectively considered, they need not be reasonable. In a certain trade—banking, for instance—there may be a long-standing custom of using only male labour in certain positions. It would, perhaps, not be considered *comme il faut* if female labour were used instead. These ideas, which one may call prejudices, though the business man does not care to run counter to them, may give the male a higher wage, no matter how equal the work may be objectively. A number of considerations that cannot really be regarded impartially as unjust—consideration of security against thieves, for instance, or the need to maintain discipline, etc.—may help to bring about the same result. Until we have examined and tested all these things, we must not jump at the theory that female labour is generally "underpaid" relatively to male labour.

However, the claim that female labour shall be paid equally with male without regard to the state of the market, on some theoretical or emotional "grounds of justice," is on the same level as the ordinary Socialist program of wages.

Substitution of Labour and Land for each other.

We have dealt with this substitution in the preceding chapter. A greater or less quantity of labour may be employed on an acre of ground. If the price of the use of the ground, the ground rent, and the wage are given, the economically best combination of the two is determined. The demand for labour is, therefore, not unequivocally determined by the wants of consumers and the height of wages. It is also, as we have seen, influenced to a certain extent by a price of a rival factor of production, the use of the ground. This influence means a certain modification of the scarcity of labour, but it by no means abolishes this scarcity as the essential determining factor of the price of labour.

The question how a greater wealth of land influences wages is of great practical importance. If the amount of a factor of production—in this case the land—is increased, the relative share of this productive factor, calculated according to the principle of scarcity, in the result of production is reduced. For this reason already an increased wealth in land has a tendency to raise wages. The increased demand for use of land, however, leads to a substitution of this factor of production for labour. This counteracts to some extent the fall of ground rent, though the fall is not prevented. Through the larger use of land per unit of labour the result of production is increased, and so the national income rises, and the purchasing power of consumers is enlarged, which tends to raise wages.

Hence although, on the whole, a rise of wages must follow an increased wealth in land, the agricultural workers may not receive the full advantage of the reduction of ground rents in the form of a rise of wages. There must generally be a relative fall of prices for the products of the land. In correspondence with this, if the general price-level remains unchanged, the prices of industrial products must rise, so that the industrial workers also will derive some advantage from the increase in wealth of land. The wage of the agricultural worker must in any case correspond to the standard of living which such a worker can attain by acquiring and working land of his own.

Substitution of Labour and Capital for each other.

That the disposal of capital competes with labour at many points in the productive process, and can be substituted for it, we have already seen (§ 23). At such points the prices of the substitutable quantities of the two factors of production must clearly be equal. This requirement represents a condition that co-operates in the settlement of the pricing process. Here again we find that the demand for labour is not entirely determined by the demand of consumers and by wages, but depends also upon the supply of a different factor of production, the disposal of capital. However, the possibility of modifying the demand for labour by substituting capital-disposal must not be allowed to obscure the fundamental significance of the scarcity of labour in fixing prices.

The significance of a country's wealth in capital as regards the general height of wages is seen most clearly when it is considered primarily according to the principle of scarcity, and the principle of substitution is regarded merely as a modification of this principle. An increase in wealth of capital increases the efficiency of social production, and consequently the collective income, and it strengthens the demand generally. An increased supply of capital-disposal, when the supply of labour is unchanged, improves the relative condition of the labour market at the same time. These two facts combine to raise wages as determined by the principle of scarcity.

In opposition to the wage fund theory we must point out that it is not capital, but income, that is the source of the social demand for labour, or the social capacity to purchase labour. An increased wealth of capital mainly influences this demand by increasing production and, consequently, the income of the community, and also by improving the state of the labour market by increasing a rival means of production. From this point of view the working class has a great interest in the maintenance and increase of the community's wealth in capital.

The substitution of capital-disposal for labour is, as was shown in § 23, determined by a number of different circumstances, of which the pricing of the relevant factors of production generally, in practice, plays the chief part. Other circumstances being equal, however, a low rate of interest must always favour this substitution. An increase of wages within a special trade or in a limited sphere of production has the same effect, in so far as it does not extend to the branch of production which supplies the machines, equipment, etc., by which manual labour in the branch of production in question is to be replaced. If it does, the rise of wages must increase the need of capital-disposal, and therefore its cost, to a corresponding extent. A general and uniform increase of wages in the whole economy has, therefore, only a subordinate effect as regards the possibility of substituting capital-disposal for labour. (If there were no other factor of production besides capital-disposal except "labour," this increase would clearly have no influence on the possibility of substitution. The imagined increase would then, moreover, lead to a fall in the purchasing power of the monetary unit, as the price of capital-disposal does not, as we have seen, contain the money-dimension.)

In times when there is a special scarcity of the productive factor labour, an extensive substitution of capital-disposal for labour will not, even for a time, reduce the scarcity, but rather increase it, on account of the immediate demands which the production of machines and making of durable apparatus, etc., make upon labour. The best situation for the substitution of capital-disposal for labour is, clearly, when there is for a time a certain surplus of labour, and so the wage is relatively low, but an increasing scarcity of labour, and consequently a rising movement of wages, are to be expected.

In regard to the competition of machinery and labour we may make the following observations: Inventions which make capital-disposal in the form of machinery, etc., more productive, and therefore stronger in competition with manual labour, clearly act at first in the relevant trades as a relative increase of the demand for capital-disposal, and a relative reduction of the demand for labour; and consequently as a tendency to reduce wages in the trades in question. But at the same time the prices of the products are generally much reduced, so that the demand for them, and therefore also the demand for the relevant labour, is absolutely increased; which, of course, means a tendency to raise wages.

On the other hand, the assumed technical progress brings about an increase of the total production of the community, and consequently an increase of its total income. From this we get a general increase of the demand for labour. When this demand is spread over all the different kinds of labour, the working class as a whole derives an advantage from technical advances. But it is always doubtful whether the particular labour that is employed in that trade in which the advance has occurred gains or loses by it. This will depend upon whether the favourable tendency of the increase of the demand for the product in question or the unfavourable action of the relative displacement of labour by machinery is predominant.

If labour-saving machines are introduced into a relatively small branch of industry, and the expansive capacity of the industry is not very great, the demand for the labour concerned is reduced, at least as regards the immediate future. In that case if the friction which is involved in transferring the labour to other occupations is not overcome—that is to say, if the supply remains for some time generally unchanged—it is inevitable that the workers in the trade in question will suffer from the introduction of labour-saving machinery. The injury may, according to circumstances, take the form of a reduction of wages or insufficient employment. The lower degree of employment in turn may find expression either in an increase of the number of unemployed in the trade in question or in a general under-employment. In any case the income of the workers will be reduced, and their standard of living will be lowered. The consequent degradation of labour itself is, of course, made still worse by irregular employment or under-employment. Technical advances may in these circumstances easily be bought at the expense of a destruction of human labour. These consequences can only be avoided if, in view of the danger, proper measures are taken to transfer the superfluous workers to other trades, or if the realisation of the new invention is retarded—by, for instance, the action of the Unions. Both methods, however, involve the risk of being used unnecessarily, or in wrong forms, or for too long a time, and of the efforts of the workers themselves not being enlisted sufficiently in securing the smooth working of the new improvement.

The effects of the substitution of machinery also depend very much on what sort of labour the machines require. The earlier machinery generally required labour only of an inferior quality, and on that account it was prejudicial to the development of the standard of the workers and the quality of their work. The new machinery, on the other hand, often, though not always, makes great demands on the quality of labour—on their reliability, attention, intelligence, and nervous strength. On the whole, therefore, it means an increasing demand for labour of that quality. If the production and training of workers to meet these requirements do not keep pace with the demand, the general wage-level of the labour concerned is bound to rise.

§ 36. The Supply of Labour as Determined by the Number of Workers.

To the theory of prices which defines the costs of production simply as prices that must be paid if certain sacrifices are to be made, it must seem essential to represent labour as such a sacrifice and the wage as the price that alone can secure the necessary supply of labour. It is clear that, merely in order to find a foundation for this theory, the dependence of the supply of labour upon its price has often been pressed in a way that does not seem to be justified by the facts. On the other hand, it has been sought to deny the position of labour as a primary factor of production, and to represent the supply of labour as a quantity dependent upon a special kind of production, and therefore only determined by the productive process; and, in agreement with this, to find the normal determining factor of wages in the supposed cost of production of labour. In opposition to these suppositions, which have chiefly been made in support of a theory, we must try to represent labour as it really is in its essential features and with its most important determining factors. It is then hardly possible to doubt that the supply of labour must primarily be conceived as a given quantity of the pricing problem, independent of the ordinary variations of the price of labour. This assumption must be made the basis of our first study of the theory of wages. In any case it corresponds so closely with reality that the eventual complete theory is bound to hold good for this conceivable case. The theory of wages must, therefore, in its first stage build upon the assumption that the factor of production labour is, in its various kinds and qualities, given as far as its quantity is concerned.

For the study of the supply of labour this means that we must first get a general idea of the constitution of this supply, then go on to inquire into the external—the general social—factors which determine the supply and finally make an analysis of the eventual influence of wages themselves on the amount of labour offered. We can only give this study in general outline here.

The scarcity of labour is clearly due to two factors: first, the scarcity of the workers themselves; secondly, the restriction of the amount of work per worker. In this section let us consider first the *scarcity of workers.* When the whole working class is taken as a single homogeneous mass, it must, in view of the great extent of unemployment, seem remarkable that we trace wages to the scarcity of workers. But it is not possible to form any sort of correct idea of the labour market until we are quite clear about the real composition of what we call the working class. The workers are, really, as we have already said, a very heterogeneous mass, in which every conceivable kind and quality is represented, and the transitions from one group to another are practically continuous. Differences of age alone mean an important graduation. Only a few decades of the prime of life represent the full working capacity. The young workers are a class apart, and at quite an early age, especially in modern industry the ageing workers are declassified. In regard to health, and physical capacity generally, the diversities are again very great; and in real life we find a continuous transition from the perfectly sound and competent to the half-usable and the totally unusable, the invalids in the literal sense. In addition we have to consider the very complex graduation of natural gifts in moral, intellectual, and physical respects. Here again the entire scale is represented, from the entirely reliable, energetic, and ambitious, the intelligent and capable, to the opposite extremes. These natural differences are quite conspicuous in any nation, and they are still more conspicuous when we compare one race with another.

The differences in endowment are partly obliterated, but perhaps more frequently accentuated, by education and training, and especially by differences of social environment and conditions of employment. That defective education and training, poor nourishment and similar bad conditions, also frivolity and excesses, and such customs as games and particularly drink, acting in the form of social pressure, lower the status of men as workers, and may destroy their powers altogether, hardly needs to be enlarged upon. But probably it is the conditions in which he earns his living—particularly the regularity and duration of his employment—which have the most influence on the fate of the worker. The grave social evils which are found in this sphere must not infrequently overshadow all the others.

If, then, the " working class " is composed of such different elements, and if the lower strata are constantly recruited through the action of various factors, it can no longer seem a mystery that there is a scarcity of labour of a high quality as well as a good deal of unemployment. It is only when we have a correct idea of the real constitution of the working class that we can gradually understand the real nature of the much-discussed phenomenon that is known as "the industrial reserve army." In normal conditions workers of different quality are engaged in every occupation up to a certain stage. When reductions become necessary, it may be taken as a general rule—though by no means without exceptions—that the worse workers will go first, and the best be kept longest. When the demand for labour increases, the demand must, as a rule, be met to a great extent by taking on workers of an inferior quality.* One consequence, amongst others, of this is that the cost of labour increases during a high conjuncture: which is a phenomenon of general experience. The process we have described has a certain resemblance to the extension of the cultivated area when the demand for the necessaries of life increases; land of an inferior quality has then to be taken up. But just as the existence of inferior and unused land does not prevent a real scarcity of land, and ground rent being based mainly on this, so the existence of unused workers of a much inferior quality does not prevent a real scarcity of suitable workers from making itself felt in industrial life, and being a principal determining factor of wages.

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* The satisfaction of the demand for workers during a high conjuncture cannot entirely be explained in this way. The chief reserve upon which industry drew in the last century during periods of brisk development was quite different. We will return to this question in Book IV., ch. xv.

This analogy of the pricing of labour with that of land is not complete. The usual idea, that the land last taken up pays no rent, is scarcely tenable in practice, but it is theoretically possible; whereas a corresponding idea in regard to the last labour taken on is theoretically out of the question. Even the worst worker who is required must receive a wage. How this can be reconciled with the fact that at the same time there is a certain amount of labour of the same or an inferior quality without employment is really one of the main problems of the theory of wages. The explanation of it, or of how there can be a scarcity of labour at the same time as a certain surplus of workers, is in the fact that the worker withholds his supply of labour. This we will consider in the next section.

In the various trades wages are, as we said, generally uniform. It is then, obviously, to the interest of the employer to engage the best worker he can for the wage. In times of scarcity of labour, however, when he must engage workers of an inferior quality, he generally has to pay them at the same rate as the more competent whom he already employed. He tries to adjust the pay to the work by piece-wages or even subtler wage-systems. But as this never succeeds entirely, the difference in the payment of the workers does not perfectly correspond with the difference in their productivity as a rule; as we generally assume in regard to the rents of different pieces of land.

In periods of depression workers of normal capacity are often unemployed, and there is then certainly a surplus of workers in a certain sense. This is largely true also of the workers in seasonal occupations in the dead season; and still more frequently of workers in trades which are subject to great fluctuations in their daily demands for labour. Over against the varying need of labour there is on the side of the supply a comparatively constant quantity of workers which is large enough, at least by extra exertion (overtime, etc.), to meet the maximum demand, and is consequently too large to find complete employment in times of decreased demand. This phenomenon is not peculiar to the labour market. Industry has also to arrange its factory equipment and machines, shipping companies their tonnage, railways their rolling stock, if not to meet the maximum demand, at all events to meet the needs of the brisker periods of business; and this fixed capital has, consequently, to drop out of use partly in less busy periods. The detailed study of these things belongs to the dynamics of the economic life, and will come in our Fourth Book. Here we need only say that in the cases mentioned the supply of means of production as a whole can hardly be described as excessive; which does not prevent the impossibility of finding full occupation in times of depression for the means of production already devoted to use from being very disagreeable to the owners of them. Naturally, this must apply particularly to the workers who find no use for their labour in times of short demand. For them there is then a real, if temporary, overstocking of the market. That simultaneously with this overstocking of the market with workers there is a scarcity of labour is, clearly, a necessary condition of any wage being paid at all. The interesting question how it is possible to realise this condition belongs, as we said, to the next section.

Here we observe only that a slight unemployment shown in statistics need not prove a surplus of workers. On the labour market both supply and demand are qualitative, and are so differentiated in point of space and time that there must always be some lack of agreement. The frequent change of job which is unavoidable in the actual organisation of many trades (such as the building trade) is bound to appear in the statistics in a certain not inconsiderable percentage of unemployment; but that does not prevent the employers from having at the same time a difficulty in getting men. It is much the same in some other trades, though to a less extent. A well-organised labour exchange could cut this unemployment down to a minimum, but could never entirely prevent it.*

The number of workers is, of course, primarily determined by the increase of population. This is, however, not uniform, as a rule; it differs considerably in different strata of the population. There is generally a certain reserve in the upper strata, while the lower classes multiply more rapidly. The large number of children in certain strata of the working class makes it difficult to rear and educate them, and it is therefore difficult for them to rise to a higher level. The inevitable result is an overstocking of the market with unskilled workers and workers of an inferior quality. If at the same time the higher classes and the higher strata of the working class have, relatively, too few children, there may be, relatively, too great a scarcity of professional workers, especially in positions of management, where a higher education is necessary. The state of the market is then very unfavourable for the poorest class, and wages in this class inevitably fall considerably. That the unequal distribution of the increase of population means also an additional burden on the lower classes and a worsening of their position is just as obvious as that it is injurious to the interest of the producing community in the proper education of their children.

Passing over these inequalities of the increase of population, and considering the increase as a whole as an expression of the supply of workers, we have first to notice the relation between this increase of population and the simultaneous increase of the other factors of production, land and capital. If we consider first the scarcity of workers relatively to the scarcity of land, it is at once clear that the state of the market for workers in an increasing population must be unfavourable if the land is limited in extent, and the methods of cultivation are practically fixed. If, on the other hand, the land can be increased by opening up new districts or countries, or made to produce more by technical improvements, it is possible to have an increase of population without injuring the labour market, and even to improve it. In the first case a pessimistic view of the population question, in the second an optimistic, will prevail.

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* Perfect use is not possible in any branch of the economic life. Even in the most intensive traffic only a part of the resources of the railways is really used. In a large town with a pronounced scarcity of houses there are always some houses vacant.

The scarcity of workers must, however, also be considered in relation to the scarcity of capital. An increase of population at a more rapid rate than the increase of capital must inevitably make the market for the factor of production labour worse. Every economic advance depends upon the condition that the supply of workers is more and more restricted in proportion to the supply of capital. Hence a more even distribution of income does not of itself suffice to raise the working classes. It is only when we have in addition a sufficiently abundant formation of capital and a sufficient restraint in regard to the increase of population that anything is done permanently for the working class. The condition of certain colonial countries with a democratic distribution of income must not mislead us in this respect. When there is an abundance of land and a considerable inflow of capital from older countries with plenty of capital, it is always possible to have a sufficient scarcity of workers together with a considerable increase of population.

Undoubtedly the increase of population is mainly determined by factors which lie outside the pricing process. Yet even in regard to the factor of production we are considering, prices are certainly not altogether without influence on the supply, and primarily on the supply of workers. The attempt to regard the worker as a product, the supply of which simply depends upon the cost of production being covered by the income of labour, fails entirely. Men are not produced for economic reasons. The result of the sacrifices for the education of the new generation falls for the most part upon others than those who have borne the cost. The cost of producing and maintaining men of a certain efficiency must, of course, be paid; but it is, as a matter of fact, paid out of the current national income, not simply out of the income which these men earn themselves, still less necessarily out of their labour-income. In the progressive community a larger sum is paid for the education of the young than a repayment of the cost of education by the working generation would cover. In a community with decreasing population the opposite might happen. There is, therefore, no direct connection between the cost of production of the workers and their labour-service.

Neither can it be said that an increasing income of labour always and necessarily means an increase of the production of new workers. The production of new workers, as a matter of fact, does not follow the income of the workers. The higher strata of the population, and the higher strata of the working class proper, have relatively few children; and it is the same with wealthy nations. But the effect of an increase of the income of labour is complicated in so far as, even when it means a certain amount of birth-control, it permits a better rearing of the children, and to that extent has a tendency to increase the supply of workers. On infant mortality, however, the rate of wages should have less direct influence than hygienic knowledge and public hygienic measures. The better the authorities care for neglected children, so much the less will the rate of wages mean directly for the increase of population in an advanced modern civilisation.

If we consider the separate strata of the population, we find that the supply of workers is still less determined by the covering of the cost of production by the income of labour. Workers of a certain quality can, as we have seen (§ 32), even permanently be kept at a wage which does not cover their cost of production. The various strata of the population are not sharply marked off from each other, and therefore not merely recruited from themselves. The labour-income of a certain class of workers need not then necessarily cover the cost of production of it.

Such a state of things in the sphere of production proper would naturally be in contradiction with the principle of cost, and consequently with the general economic principle. But, as we said, men are not produced for economic reasons, and at least in our actual social order we cannot avoid men being born and reared who will afterwards, for reasons either inherent in them or in the labour market, prove of inferior quality, and will never cover the cost of their production by their labour. But these workers contribute to the social supply of labour. It is particularly clear here that the theory of the pricing process in the exchange economy, as we have often pointed out, must regard the supply of workers primarily as a factor of the problem determined on independent grounds, and therefore a given factor.

Up to the present we have only considered the number of the workers in general, or that of workers of a certain quality. Now let us consider the supply of workers in special trades and places. As a matter of fact, the mobility of the worker is restricted by various circumstances. The man who trains himself for a particular trade, settles in a particular place, perhaps founds a family, and acquires his own house, will be very unwilling to leave his trade or his locality. Generally speaking, mobility is most restricted in the higher age-classes of the workers. It is natural enough that there are difficulties in the way of a change of trade. These difficulties have, it is true, in modern conditions, been reduced in many trades by the substitution of machine-minders, who fairly easily pass from one trade to another, for the old highly trained and specialised craftsmen. There are, however, still difficulties in the way that have not been overcome.

In the original choice of a trade there is greater liberty, but the choice is generally strongly influenced by environment and the nearest opportunities. In places with specialised industries the choice is often very restricted. Women workers are to a great extent tied up with their families, and therefore confined to the labour market that is found nearest to the house of the father. These obstacles to the free movement of the workers can easily lead to a certain overstocking of a special market for labour, and so exert a certain pressure on wages. The relatively greater immobility of women workers must often be responsible to some extent for their relatively low wages.

The choice of occupation is further much restricted by the cost of training. We often find that this cost is quite negligible in proportion to the difference in wages received in the various trades or in different occupations of the same trade. From a purely business point of view training for a better trade or higher position would be profitable. The explanation generally is that the cost, though small in proportion to the profit, is an insurmountable obstacle for the working class family or the young worker. All that is done to facilitate and improve industrial training is calculated to promote the more even distribution of the workers amongst the various trades or stages of employment, and so prevent the disproportionate depression of certain classes of wages.

Migration from one district to another of the same country is now much easier, and is also assisted by the labour bureaux. Although, however, in this respect much has been done to secure an economic distribution of the existing workers over the various areas, there are still serious impediments to the similar distribution of labour over different countries or different parts of the world, and they have a bad influence, not only on the condition of some of the groups of workers, but particularly on the general productivity of the world economy.

The delimitation of the various trades is to some extent made more pronounced by protectionist efforts within the labour world itself. The policy of every self-contained

Union is to restrict admission to the trade. But even open Unions more or less make it difficult to enter the trade by insisting on certain normal conditions of labour. Even without a Trade Union organisation proper, a traditional rate of wage, in conjunction with a traditional standard of living and efficiency, may prevent the entrance of workers of inferior quality.

The economic significance of these restrictions will always depend upon whether they are merely to the advantage of casually separated groups of workers or in a general way direct the demand to workers of a higher type, and therefore give these workers the preference in employment, put difficulties in the way of the continued existence of the workers of a poorer type, and so help to uplift the working class.

As the even distribution of the workers amongst the various positions is hampered by so many circumstances, it is to be expected that in real life we shall find inequalities of wages and other conditions of labour, which are not due merely to the requirements that are exacted of labour and the scarcity of the workers who can fulfil these requirements. In particularly progressive trades in which the need of labour has grown much more rapidly than the working class population as a whole, we often find a higher wage than the nature of the work would seem to justify. On the other hand we find that stagnant industries, which possibly could not enlarge their markets in decades, offer their workers conditions below the normal. Hence the fate of the worker is to a certain extent bound up with that of the trade or business in which he is employed. The idea that the employers prosper entirely at the expense of the workers, and the workers can only make progress at the expense of the employers, is strikingly enfeebled by these facts.

The accession of workers to the various industries is generally determined by these external factors. The wage itself serves to attract workers to a particular trade in so far as the trade competes with others for good-quality labour. But as regards the total supply of workers of every particular quality the wage paid for the various qualities does not, as we saw, act as a directly effective regulator. The principal deciding factors are outside the process of fixing prices in this case.

§ 37. THE SUPPLY OF LABOUR AS DETERMINED BY THE SUPPLY OF WORK PER WORKER.

The scarcity of the factor of production labour depends not only upon the number of workers, but also upon the amount of work done on the average by each worker. We have now to consider the factors which regulate this individual supply of labour.

The actual amount of work done by the individual is at any given moment generally much less than it could be, at least for a brief period. Men have learned that they must economise with their working powers. The highest individual and economic effect is got, as a rule, not by the greatest possible momentary exertions, but by a prudent distribution of the work over the day, week, or life. This economic regulation of the individual performance is very important as regards the social supply of labour per worker. The modern industrial development has generally led to a considerable shortening of the working day and at the same time intensification of the work. In this the efforts of the workers to get time for recreation and protection against an uneconomic use of their powers, and the recognition by public bodies of the need to regulate hours in the interest of the national health and strength, have had their part; but these tendencies were at least in part, particularly in the best-equipped businesses, in the interest of the employers, who saved general costs by getting the maximum of work in the shortest time. In modern countries the day's work is, under the influence of these tendencies, generally in the various industries either regulated by custom, or by agreement between organisations of those interested, or, particularly since the war, by legislation. In the circumstances the individual has, as a rule, no influence on his hours of labour.

The amount of work actually supplied by the individual worker further depends upon the steadiness and regularity of his employment. The man who only gets irregular work on account of defective endowment, poor education, or the effect of a bad organisation of the labour market, and meantime wanders about idly for some time in search of new employment, provides much less than the normal amount of labour. In certain trades in which the locality frequently changes (such as building) a good deal of the possible work is regularly lost. These things have, clearly, a considerable influence on the actual "supply of work per worker." Hence the general external factors which regulate this supply are fairly clear.

But we have further to consider a deliberate regulation of the supply of labour on the part of the workers themselves in order to protect or improve the state of the market. When a certain amount of unemployment sets in on account of a falling off of the demand, one would think, on general theoretical grounds of pricing, that the preponderant supply of labour must bring down the wage, and that this reduction of wages would not cease until the unemployment was eased by a stimulation of the demand, or, if this could not be done, until the wage fell to zero. In reality, it is quite different. The unemployed resist as obstinately as possible any reduction of wages, and are extremely reluctant to offer their labour at a lower price. They are confirmed in this by the idea which is current amongst advanced peoples that a lower wage means a lowering of personal dignity. The unemployed are also morally and materially supported by their colleagues in their resistance. Not infrequently their colleagues forcibly prevent them from taking lower wages. We often find that in seasonal trades wages are higher than in continuous trades. This higher wage is in a sense payment for the time of waiting, and it explains how it is possible for the workers to hold up their labour sufficiently in the dead season. Hence there is to a great extent an artificial limitation of the supply of labour, and the workers succeed in this way in maintaining a certain scarcity of the factor of production labour even in times when there is a surplus of workers, and consequently some unemployment. This is always happening, but the attempt naturally succeeds better with the organised workers, especially when they have funds for maintenance. It is only by this artificial scarcity of labour that we can theoretically explain the state of equilibrium when a certain wage is paid at a time when there is unemployment.

We also find in the labour world attempts to secure higher wages by increasing the scarcity of labour by means of restrictions of the amount of work done. The demands for a shortening of hours which, as we have seen, have mainly another aim, also look to this object. To judge the prospects of these things theoretically, we will assume that the groups of workers who seek to raise their wages in this way are fully employed. A restriction of the individual amount of work is bound in that case to reduce the output. The assumption that the efficiency of labour is proportionately increased by shortening the hours is out of question here, as it is inconsistent with the assumption of an increased scarcity of labour. If, on these suppositions, it is desired to bring about an increased scarcity of labour for the above purpose, we are bound to count upon a reduction of output. What will be the probable results of such tactics ? If the group of workers in question have competitors in the same trade, or in trades which meet similar needs, they have no prospect of success. If the group is so comprehensive that by restricting its labour it can bring about a real restriction of the supply to consumers, the prospect is rather more favourable. If the elasticity of this restricted demand is not particularly great, the labour in question will soon receive an increased price per unit of labour. But even in cases where an increase of the hourly wage or the piece wage is obtained by an artificial restriction of the hours of work or the amount of work per hour, it is doubtful whether the increase will outweigh the reduction in the amount of the day's work.

If this is not so, the income of the worker is bound to be reduced by this policy.

The reduction of output brought about by restricting work must, clearly, bring down the entire purchasing power of the community to a certain extent. Thus the possible gain of a closed group of workers is bought by a certain hardening of the market for labour generally. If the group in question is very large—say, includes the whole of the manual workers—this last effect will, as we have said (§ 35), prove to be generally of predominant importance. It is beyond question that a reduced income for the workers would be the result of a *general* restriction of the hours of labour without at the same time raising the efficiency of labour.

Sometimes it is said that the aim of the restriction of the day's output is to find employment for all the workers in the trade. This is, clearly, an entirely different object than the one we have considered, and precisely on that account the assumption from which we now start—that there is a certain amount of unemployment—had to be kept out of the previous case. If, in accordance with our present assumption, the total amount of labour supplied is not reduced by the limitation of the individual's labour, but merely distributed over a larger number, obviously the scarcity and the price of labour will not be affected by the change. The total income of labour remains the same, and is merely divided amongst a larger number. But the income of the individual must be reduced in proportion to the reduction of his hours. In temporary crises and in the quiet periods of seasonal trades it is often useful to distribute the diminished employment in this way. But as a normal remedy for unemployment the method is very dangerous, as it keeps an unnecessarily large number of workers within a trade, and keeps them in a state of chronic underemployment and correspondingly reduced standard of living.

Let us now see what effect the wage itself may have on the individual supply of labour. The theory which regards wages as a price that must be paid in order that a certain amount of work will be done, and therefore defines the wage as an element of cost corresponding to the sacrifice involved in the work, puts the dependence of the individual's work upon his wage in a prominent position which the facts do not justify. First, as regards the hours of labour, it follows from what we said above that they are mainly determined by other factors than wages. At all events, there can be no question of an increased wage leading to longer hours of work. On the contrary, it is a normal feature of the actual development that the demands for shorter hours increase with wages, and are successful. What is called the "disutility theory," according to which the wage must cover the disagreeableness of the last extension of the day's work, and is determined by this condition, seems to be an untenable theoretical construction; especially in view of the fact that the individual, who alone can experience this disagreeableness, practically has no influence on his hours of labour.

On the other hand, the quality of the labour offered certainly depends to some extent upon the wage. The intensity of modern work implies a correspondingly high standard of living on the part of the worker, and the wage is thus in a sense put on the same footing as the cost of maintaining and running the machinery. But we must remember that an increase of wages by no means certainly, still less directly, means an increase of the efficiency of the work. Such effect of higher wages is rather due in the main to other matters, such as racial character, education, the general policy of consumption, and so on. A rise of the standard of life of the worker, and therefore of the efficiency of his work, is generally merely the outcome of a slow development, and cannot simply be purchased by a higher wage. The socio-political value of an increase of wages seems to depend to a great extent on whether it is sudden or gradual. Too rapid an increase of wages may very easily reduce the worker's industry and regularity, or lead him to an uneconomical consumption that even at times injures his own working powers, and so engender habits that will be prejudicial to his whole future and extinguish entirely the advantage of the rise of wages. The rapidity with which the young worker attains his highest income in modern conditions often has bad effects for this reason. A higher wage, in short, is a necessary, but by no means the only necessary, condition of more efficient work.

Nor can it be said generally that the wage must necessarily cover the current cost of maintenance of labour. As a matter of fact, there are such great numbers of weak and economically inferior workers that their wage, according to the principle of scarcity, is often reduced to an amount that does not suffice to cover the bare cost of maintenance of labour. Here, again, we have a special confirmation of our idea of the supply of labour as a factor of the pricing problem essentially determined by independent factors.

It may be necessary to supplement such very low wages by the assistance of the family; in special cases by benevolence or public provision for the poor. Hence it is not possible to maintain the principle of cost strictly in regard to human labour. On the other hand, it is clear that assistance of this sort must always have a bad effect. Any sound social policy must aim at educating men as far as possible to be self-reliant, and will therefore observe the principle of cost as strictly as it can in regard to human labour. A theory of wages that started with the supposition that these efforts had fully achieved their purpose would be too far away from the facts.

It follows unquestionably from what we have said that, like the supply of workers, the supply of work per worker must be regarded as a given factor of the pricing process. Both the hours of labour and the regularity and intensity of the work are determined by general factors outside the pricing process. The influence of the wage itself sinks entirely into the background, or at the most it may make itself felt in a very long period and with the co-operation of other factors. That in these circumstances the correct first approximation of the theory of prices is the assumption that work does not depend upon wages is clear. This assumption brings out clearly the scarcity of labour as the first determining factor of wages, whereas the idea of the wage as compensation for something done is thrust into the background.

Finally, we may observe that, although the wage itself has very little influence on the work done, the form in which the wage is paid may have a direct and considerable influence on it. Those forms of wages which give, not merely the hours of work or the amount of work done, but the work done per unit of time, an influence on the wage, have unquestionably a great effect on the intensity of the work (sometimes too great an effect, prejudicial to the economic use of the working power). The forms of wages have, therefore, a not unimportant place amongst the independent factors acting on the side of the supply, which the theory of prices must take as given elements.

§ 38. The Wage in a Socialist Community.

The Socialist views on the problem of wages have not been built into a consistent and generally recognised logical system. It is, however, not difficult to get an idea of the main content of these views. The principal defect of the actual social order with special regard to the labour question is, according to the Socialists, as we have already seen (§ 31), that both the wage and the employment of the worker depend upon the state of the market, and are determined by commercial factors. By this system labour is reduced to the status of a commodity, which is not consistent either with the human dignity of the worker or his rights as a member of the productive community. Socialism condemns this economic order, and requires full employment of the worker (or suppression of unemployment) as well as determination of wages on objective grounds. In fixing the wage there may be a regard for the worker's competence, for the length of time required for training him, for the difficulty or unpleasantness of his occupation, and so on; but only on objective grounds, based upon the nature of the work, by no means on the state of the market, the number of competing workers, or anything of that kind. In these demands we have, as we said in § 31, the very marrow of the Socialist program of "the abolition of the wage-system."

But these demands obviously imply a new object of pricing. Whereas in the exchange economy the chief object of pricing is, according to our fundamental study, so to restrict consumption and direct the use of the productive forces of the economy, and ultimately also stimulate the supply of these, that there will be an equilibrium of supply and demand, the Socialist requirements demand of the pricing process that it shall regulate the social distribution of income, and on independent, objective-ethical grounds, apart from all regard for the state of the market. Now this demand is, as one easily sees, inconsistent with the general economic principle of pricing. Pricing is, as we have seen, determined as a whole by this aim, and cannot, therefore, be subject to any second condition. In a pricing process that would effect a certain distribution of income it is clearly not possible to maintain at one and the same time the freedom of consumption and the freedom of choice of profession, locality, and propagation—in a word, the freedom of supply of labour. Thus a realisation of the wishes of the Socialists would mean an abandonment of certain essential values of the exchange economy.

It is part of the nature of the exchange economy that both wage and employment are expressions of the demand for work at the actual supply. The much-discussed "value" of labour can, as a matter of fact, only be defined as the price of labour in the ideal pricing process, governed by the principle of scarcity, which we described above. This definition indicates all that there can really be in such vague, but popular, expressions as "the full return of labour," "the real share of labour in the outcome of production," etc. A pricing process that fixes wages on the principle of scarcity is indifferent to the distribution of income in the community. If we want to modify this process, while preserving the bases of the exchange economy, in favour of one or other group of workers, there is no other way to do it except to regulate the "value" of labour, or influence the market in such a way that the price of labour is raised.

There are in the actual exchange economy, according to the result of our inquiries, various ways of regulating the labour market in this sense. There are socio-political measures for preventing the overstocking of badly paid trades, for suppressing the under-payment of labour in certain trades by fixing a minimum wage, or generally, making it difficult to have a standard of living not covered by the real cost of life. National education helps positively to strengthen the position of labour on the market, especially technical training. So do a well-organised and reasonably conducted labour exchange, a suitable local distribution of the population, a limitation of the increase of population in the strata of society in which it is excessive, and, in certain circumstances, a certain general restriction of the growth of population relatively to the possiblities of increasing the other factors of production, land and capital. Finally, the state of the labour market is improved in a general way by increasing the community's purchasing power, or raising the productivity of labour, and consequently the entire collective production.

The Socialist State would be bound to proceed in the same way, or seek to influence the labour market by the means indicated here or others that seemed suitable, so that labour would attain a proper value. If this were successfully done under Socialism, it would be superfluous to seek to regulate wages in any other fashion in antagonism to the principle of scarcity. In any such attempt Socialism would run counter to its own earlier program of realising the right to the full fruits of labour. For if this right is secured to the workers by the ideal pricing based upon the principle of scarcity, any encroachment for the regulation of wages from other points of view will deprive some of the workers of part of the full return on their labour and give others a surplus above the full return on their labour.

It might be objected that the Socialist community has, by abolishing private ownership of the material means of production, taken over the "idle income," and must therefore be in a position to improve the position of the poorer classes without touching the income of the higher workers.

On the other hand, Socialism must, like any other economy, meet a number of purely collective wants. It must also take up the work of education, art, etc., which is at present sustained by large private incomes; and it must, in fine, take upon itself the entire burden of accumulating capital. If, after paying the cost of all this, Socialism has any money left, it can only mean that the prices of finished articles generally can be somewhat reduced. That must be done, as the proper aim of pricing is to restrict consumption. This reduction is clearly equivalent to a distribution of a dividend of the Socialist State on the principles of a Co-operative Society. The fixing of higher prices than necessary is equivalent to taxation; but taxation of larger incomes in order to improve the smaller is always a sin against the program of the right to the full fruits of labour.

Moreover, even in a Socialist State any attempt to supplement the incomes of the poorer workers must necessarily make it easier for the lowest workers to remain in inferior employment, and this will make the market still worse, and wages will be further reduced. The result is bound to be the same as it is in all experience, when there is any attempt to supplement low wages by public means. The Socialist community would find that real social progress could be obtained, not by transferring income from one class of society to another, but merely by measures which raise the value of inferior labour.

This issue might very well be taken as the guiding star of all rational social politics in our actual social order.

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